6-12-01

6-16-00


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=> file reg
FILE 'REGISTRY' ENTERED AT 11:01:21 ON 29 MAY 2003
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=> display history full l1-

     FILE 'HCAPLUS' ENTERED AT 09:39:04 ON 29 MAY 2003
L1         14703 SEA SUZUKI Y?/AU
L2          1461 SEA SHIBUYA M?/AU
L3            70 SEA L1 AND L2
L4        412826 SEA ELECTROLY?
L5        188670 SEA BATTERY OR BATTERIES OR (ELECTROCHEM? OR ELECTROLY?
                 OR GALVANI? OR WET OR DRY OR PRIMARY OR SECONDARY)(2A)(CE
                 LL OR CELLS) OR WETCELL? OR DRYCELL?
L6        506059 SEA (52 OR 72)/SC,SX
L7            10 SEA L3 AND L4
L8         36612 SEA ?VINYLIDEN?
L9             6 SEA L7 AND L8
L10            3 SEA L9 AND GEL?
                 SEL L10 1-3 RN

     FILE 'REGISTRY' ENTERED AT 09:51:40 ON 29 MAY 2003
L11           49 SEA (96-49-1/BI OR 105-58-8/BI OR 12190-79-3/BI OR

L12           15 SEA L11 AND PMS/CI
                 E VINYLIDENE FLUORIDE/CN
L13            1 SEA "VINYLIDENE FLUORIDE"/CN
                 D RN
L14         1918 SEA 75-38-7/CRN
L15            8 SEA L12 AND L14
                 D L15 1-8 IDE
                 SEL L15 1-6 RN
L16            6 SEA (161109-32-6/BI OR 25684-81-5/BI OR 380481-15-2/BI
                 OR 380481-16-3/BI OR 380481-17-4/BI OR 380481-37-8/BI)

     FILE 'HCAPLUS' ENTERED AT 09:59:39 ON 29 MAY 2003
L17           29 SEA L16
L18            5 SEA L17 AND (L4 OR L5 OR L6)

     FILE 'LREGISTRY' ENTERED AT 10:02:32 ON 29 MAY 2003
L19              STR

     FILE 'REGISTRY' ENTERED AT 10:24:54 ON 29 MAY 2003
L20           24 SEA SUB=L14 SSS SAM L19
L21          483 SEA SUB=L14 SSS FUL L19
                 SAV L21 WEI753/A
                 E HEXAFLUOROPROPYLENE/CN
L22            1 SEA HEXAFLUOROPROPYLENE/CN
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                D RN
L23          1436 SEA 116-15-4/CRN
L24           533 SEA L23 AND L14
L25           157 SEA L24 AND L21

     FILE 'LREGISTRY' ENTERED AT 10:30:24 ON 29 MAY 2003
L26               STR L19
                  E MALEIC ANHYDRIDE/CN
L27             1 SEA "MALEIC ANHYDRIDE"/CN
                  D RN

     FILE 'REGISTRY' ENTERED AT 10:38:00 ON 29 MAY 2003
L28         22071 SEA 108-31-6/CRN
L29             9 SEA L14 AND L28
L30             2 SEA SUB=L21 SSS SAM L26
L31            29 SEA SUB=L21 SSS FUL L26
                  SAV L31 WEI753A/A

     FILE 'HCA' ENTERED AT 10:42:55 ON 29 MAY 2003
L32           302 SEA L21
L33             8 SEA L29
L34            20 SEA L31
L35            87 SEA L25
L36             4 SEA L33 AND (L4 OR L5 OR L6)
L37            13 SEA L34 AND (L4 OR L5 OR L6)
L38            11 SEA L35 AND (L4 OR L5 OR L6)
L39            28 SEA L32 AND L4
L40            35 SEA L32 AND L5
L41            37 SEA L32 AND L6
L42            25 SEA L39 AND (L40 OR L41)
L43        473151 SEA GEL OR GELS OR GELLED OR GELLING# OR GELATION? OR
                  GELATINOUS?
L44             6 SEA L42 AND L43
L45            14 SEA L18 OR L36 OR L44
L46            10 SEA (L37 OR L38) NOT L45
L47            14 SEA L42 NOT (L45 OR L46)
L48            24 SEA L17 NOT (L45 OR L46 OR L47)


=> d l31 que stat
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L19               STR
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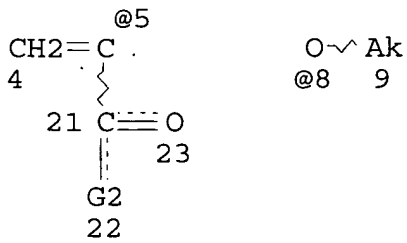
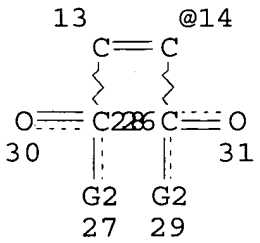
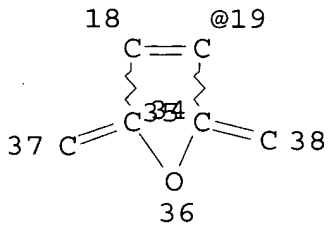
G1 1



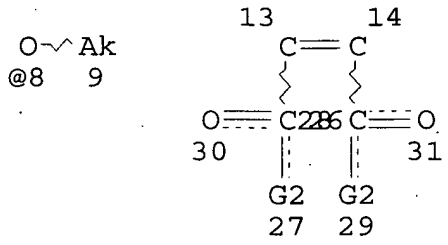




VAR G1=5/14/19
VAR G2=OH/8
NODE ATTRIBUTES:
CONNECT IS E1 RC AT 9
DEFAULT MLEVEL IS ATOM
GGCAT IS SAT AT 9
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 23

STEREO ATTRIBUTES: NONE
L21 483 SEA FILE=REGISTRY SUB=L14 SSS FUL L19
L26 STR



VAR G2=OH/8
NODE ATTRIBUTES:
CONNECT IS E1 RC AT 9
DEFAULT MLEVEL IS ATOM
GGCAT IS SAT AT 9
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 10

STEREO ATTRIBUTES: NONE
L31 29 SEA FILE=REGISTRY SUB=L21 SSS FUL L26

100.0% PROCESSED 58 ITERATIONS 29 ANSWERS
SEARCH TIME: 00.00.01

=> file hca
FILE 'HCA' ENTERED AT 11:02:25 ON 29 MAY 2003
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=> d l45 1-14 cbib abs hitstr hitind

L45 ANSWER 1 OF 14 HCA COPYRIGHT 2003 ACS
138:240658 Polymer **gel electrolytes** and lithium secondary **battery**.. Tokai, Yusuke; Mizuguchi, Akio; Higami, Akihiro (Mitsubishi Materials Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2003077539 A2 20030314, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-266910 20010904.

AB The disclosed polymer **gel electrolyte** comprises **electrolyte** soln. and a polymer **gel** consisting of a matrix polymer and different polymer particles dispersed in the matrix polymer. Sheet shaped lithium secondary **batteries** which use the above **electrolyte** is also disclosed. The **electrolyte** show high ion cond. and good mech. property..

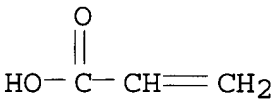
IT **109955-89-7**, Acrylic acid-vinylidene fluoride graft copolymer
(lithium secondary **battery** polymer **gel electrolyte** compn. contg.)

RN 109955-89-7 HCA

CN 2-Propenoic acid, polymer with 1,1-difluoroethene, graft (9CI) (CA INDEX NAME)

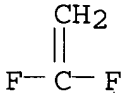
CM 1

CRN 79-10-7
CMF C3 H4 O2



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M010-40
ICS H01B001-06; H01M006-18

CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)

ST polymer **gel electrolyte** lithium secondary **battery**

IT Fluoropolymers, uses
(lithium secondary **battery** polymer **gel electrolyte** compn. contg.)

IT Secondary **batteries**

(lithium; polymer **gel electrolyte** compns. for)

IT **Electrolytes**
(polymer **gel**; lithium secondary **batteries** with polymer particles dispersed in matrix polymer)

IT 9011-17-0, Kynar 2810 24937-79-9, Poly(vinylidene fluoride) **109955-89-7**, Acrylic acid-vinylidene fluoride graft copolymer
(lithium secondary **battery** polymer **gel electrolyte** compn. contg.)

L45 ANSWER 2 OF 14 HCA COPYRIGHT 2003 ACS
138:58932 Lithium-ion **battery** with polymer **electrolyte**. Mori, Takaki; Koike, Takeshi; Lee, Hyung-bok (Samsung Sdi Co., Ltd., S. Korea). U.S. Pat. Appl. Publ. US 2002197536 A1 20021226, 11 pp. (English). CODEN: USXXCO. APPLICATION: US 2002-124263 20020418. PRIORITY: KR 2001-35509 20010621.

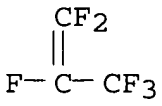
AB The title **battery** comprises a cathode, an anode, a porous separator disposed between the cathode and anode, a first polymeric **electrolyte** positioned at the one surface of the separator and in contact with the cathode, and a second polymeric **electrolyte** positioned at the other surface of the separator and in contact with the anode. The first and second polymeric **electrolytes** use host polymers which produce different pH levels in aq. solns. when extd. with water. A method for prepn. of the title **battery** comprises (a) forming a first polymeric **electrolyte** layer having a first host polymer on a side of a separator or a cathode, (b) forming a second polymeric **electrolyte** layer having a second host polymer on a side of a separator or an anode, (c) **gelling** the first and second polymeric **electrolyte** layers, and (d) placing the **gelled** separator between a cathode and anode or by placing the separator between the **gelled** first and second polymeric **electrolyte** layers of the cathode and the anode. The lithium-ion **batteries** with the above polymer **electrolytes** have high discharge capacities that are maintained even with repeated cycles of charging and discharging, thereby improving cycle life characteristics of the **batteries**.

IT **162817-95-0P 219748-63-7P**
(lithium-ion **batteries** with polymer **electrolytes**)

RN 162817-95-0 HCA
CN 2-Propenoic acid, polymer with 1,1-difluoroethene and 1,1,2,3,3,3-hexafluoro-1-propene (9CI) (CA INDEX NAME)

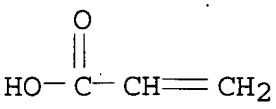
CM 1

CRN 116-15-4
CMF C3 F6



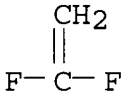
CM 2

CRN 79-10-7
CMF C3 H4 O2



CM 3

CRN 75-38-7
CMF C2 H2 F2

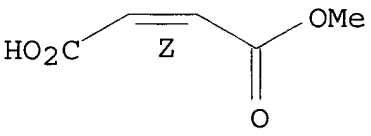


RN 219748-63-7 HCA
CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with 1,1-difluoroethene and 1,1,2,3,3,3-hexafluoro-1-propene (9CI) (CA INDEX NAME)

CM 1

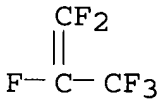
CRN 3052-50-4
CMF C5 H6 O4

Double bond geometry as shown.



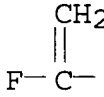
CM 2

CRN 116-15-4
CMF C3 F6



CM 3

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M010-40
ICS H01M010-04
NCL 429309000; 429316000; 429317000; 429303000; 029623100
CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST polymer **electrolyte** lithium ion **battery**
IT Polymer **electrolytes**
(lithium-ion **batteries** with polymer **electrolyte** of)
IT **Battery electrolytes**
Secondary **batteries**
(lithium-ion **batteries** with polymer **electrolytes**)
IT 9011-17-0P, Hexafluoro propylene-vinylidene fluoride copolymer
(lithium-ion **batteries** with polymer **electrolyte** of)
IT **162817-95-0P** 215653-67-1P **219748-63-7P**
479256-68-3P 479256-69-4P
(lithium-ion **batteries** with polymer **electrolytes**)

L45 ANSWER 3 OF 14 HCA COPYRIGHT 2003 ACS
137:372562 Polymer-**electrolyte battery** with **gelled electrolyte** having resistance to oxidation and reduction. Oba, Kazuhiro (Sony Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2002334719 A2 20021122, 14 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-136485 20010507.
AB The title **battery** is equipped with a solid **electrolyte** laminated between a cathode and an anode, where a solid **electrolyte** having high oxidn. resistance is placed at cathode side and a solid **electrolyte** having high redn. resistance is placed at anode side. The solid **electrolyte** may be a **gelled electrolyte** contg. a nonaq. solvent having high oxidn. resistance, where its concn. is lowered from the cathode side to the anode side.

Alternatively, the solid **electrolyte** contains a nonaq. solvent having high redn. resistance at the anode side. The solid **electrolyte** may use a polymer having high oxidn. resistance placed at cathode and a polymer having high redn. resistance placed at anode side. The **battery** has high thermal stability and long cycle life.

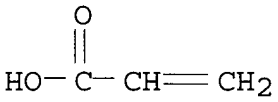
IT **61778-05-0D**, Acrylic acid-vinylidene fluoride copolymer, lithium complexes
(**gelled** polymer **electrolyte** contg. combined solvent for resistance to oxidn. and redn. in **battery**)

RN 61778-05-0 HCA

CN 2-Propenoic acid, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

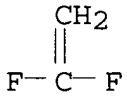
CM 1

CRN 79-10-7
CMF C3 H4 O2



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M010-40
ICS H01M004-02

CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)

ST **gelled** polymer **electrolyte** solvent lithium **battery**

IT **Battery electrolytes**
Polymer **electrolytes**
(**gelled** polymer **electrolyte** contg. combined solvent for resistance to oxidn. and redn. in **battery**)

IT Secondary **batteries**
(lithium; **gelled** polymer **electrolyte** contg. combined solvent for resistance to oxidn. and redn. in **battery**)

IT 21324-40-3, Lithium hexafluorophosphate
(**electrolyte**; **gelled** polymer **electrolyte** contg. combined solvent for resistance to

oxidn. and redn. in **battery**)

IT 9011-17-0D, Hexafluoropropylene-vinylidene fluoride copolymer, lithium complexes 25014-41-9D, Polyacrylonitrile, lithium complexes **61778-05-0D**, Acrylic acid-vinylidene fluoride copolymer, lithium complexes
(**gelled** polymer **electrolyte** contg. combined solvent for resistance to oxidn. and redn. in **battery**)

IT 96-48-0, .gamma.-Butyrolactone 96-49-1, Ethylene carbonate 105-54-4, Ethyl butyrate 105-66-8, Butyric acid propyl ester 108-29-2, .gamma.-Valerolactone 108-32-7, Propylene carbonate
(solvent; **gelled** polymer **electrolyte** contg. combined solvent for resistance to oxidn. and redn. in **battery**)

L45 ANSWER 4 OF 14 HCA COPYRIGHT 2003 ACS

137:203964 Fluoropolymer **gel** composition for **electrolyte** in lithium ion **battery**. Kanega, Atsushi; Enokida, Takashi; Nakamura, Seiichi (Nippon Mectron Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002249589 A2 20020906, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-47510 20010223.

AB The title compn. contains a carboxyl group- and F-contg. copolymer comprising vinylidene fluoride 80-98, fluoroolefin monomer other than vinylidene fluoride 0-20, and F-contg. unsatd. carboxylic acid monomer R1R2C:CR3CO2H (R1-R3 = H, F, or C1-6 halogen-substituted alkyl; .gtoreq.1 of R1-R3 is F or halogen-substituted alkyl) 0.1-20 mol.% and a Li salt-dissolving org. solvent. The title Li ion **battery** is equipped with a **gel** polymer **electrolyte** contg. the above compn. and a Li salt. The compn. has high heat resistance and swelling property.

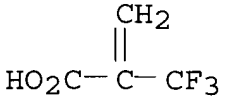
IT **453568-91-7DP**, lithium complexes **453568-92-8DP**, lithium complexes **453568-93-9DP**, lithium complexes **453568-94-0DP**, lithium complexes
(fluoropolymer **gel** compn. for **electrolyte** in lithium ion **battery**)

RN 453568-91-7 HCA

CN 2-Propenoic acid, 2-(trifluoromethyl)-, polymer with 1,1-difluoroethene and 1,1,2,3,3,3-hexafluoro-1-propene (9CI) (CA INDEX NAME)

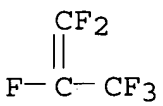
CM 1

CRN 381-98-6
CMF C4 H3 F3 O2



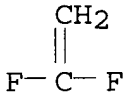
CM 2

CRN 116-15-4
CMF C3 F6



CM 3

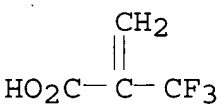
CRN 75-38-7
CMF C2 H2 F2



RN 453568-92-8 HCA
CN 2-Propenoic acid, 2-(trifluoromethyl)-, polymer with chlorotrifluoroethene, 1,1-difluoroethene and 1,1,2,3,3,3-hexafluoro-1-propene (9CI) (CA INDEX NAME)

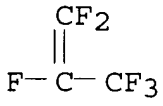
CM 1

CRN 381-98-6
CMF C4 H3 F3 O2



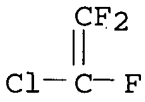
CM 2

CRN 116-15-4
CMF C3 F6



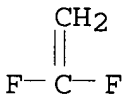
CM 3

CRN 79-38-9
CMF C2 Cl F3



CM 4

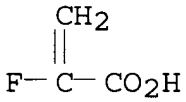
CRN 75-38-7
CMF C2 H2 F2



RN 453568-93-9 HCA
CN 2-Propenoic acid, 2-fluoro-, polymer with chlorotrifluoroethene, 1,1-difluoroethene and 1,1,2,3,3,3-hexafluoro-1-propene (9CI) (CA INDEX NAME)

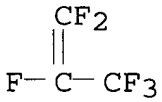
CM 1

CRN 430-99-9
CMF C3 H3 F O2



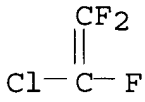
CM 2

CRN 116-15-4
CMF C3 F6



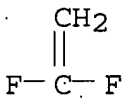
CM 3

CRN 79-38-9
CMF C2 Cl F3



CM 4

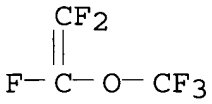
CRN 75-38-7
CMF C2 H2 F2



RN 453568-94-0 HCA
CN 2-Propenoic acid, 2-(trifluoromethyl)-, polymer with chlorotrifluoroethene, 1,1-difluoroethene and trifluoro(trifluoromethoxy)ethene (9CI) (CA INDEX NAME)

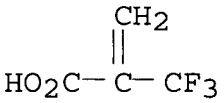
CM 1

CRN 1187-93-5
CMF C3 F6 O



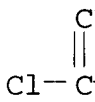
CM 2

CRN 381-98-6
CMF C4 H3 F3 O2



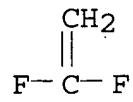
CM 3

CRN 79-38-9
CMF C2 Cl F3



CM 4

CRN 75-38-7
CMF C2 H2 F2



IC ICM C08J003-075
ICS C08K003-16; C08L027-16; H01M010-40
CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST carboxyl fluoropolymer **gel** compn **electrolyte** lithium **battery**
IT Fluoropolymers, uses
(carboxy-contg., lithium complexes; fluoropolymer **gel** compn. for **electrolyte** in lithium ion **battery**)
IT **Battery electrolytes**
Gels
(fluoropolymer **gel** compn. for **electrolyte** in lithium ion **battery**)
IT Secondary **batteries**
(lithium; fluoropolymer **gel** compn. for **electrolyte** in lithium ion **battery**)
IT 7439-93-2DP, Lithium, carboxyl group-contg. fluoropolymer complexes **453568-91-7DP**, lithium complexes **453568-92-8DP**, lithium complexes **453568-93-9DP**, lithium complexes **453568-94-0DP**, lithium complexes
(fluoropolymer **gel** compn. for **electrolyte** in lithium ion **battery**)
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
(solvent; fluoropolymer **gel** compn. for **electrolyte** in lithium ion **battery**)

L45 ANSWER 5 OF 14 HCA COPYRIGHT 2003 ACS
136:56445 Methods for preparation of microporous solid **electrolytes** for rechargeable **batteries**. Jang, Dong Hun; Kim, Sa Heum; Kim, Han Jun (Finecell Co., Ltd., S. Korea). PCT Int. Appl. WO 2001099220 A1 20011227, 45 pp. DESIGNATED STATES: W: CN, JP, KR, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 2000-KR482 20000524.
AB The present invention is directed to an **electrolyte** film and/or a solid **electrolyte**, having a microporous structure, for a rechargeable cell. According to the present invention, when prepg. the **electrolyte** film and/or the solid **electrolyte**, an inorg. absorbent is added in the amt. of more than 70% by wt. in a polymer matrix to prevent the porous structure from being destructed at the cell-assembling process such as lamination or pressing, whereby the absorbing power

of a liq. **electrolyte** to the solid **electrolyte** film and the ionic cond. can be maintained. The inorg. absorbent contained over the specific amt., together with the microporous structure, improves the capacity of absorbing the liq. **electrolyte** and, in particular, works as a structure element of increasing the mech. strength of **electrolyte** film and/or solid **electrolyte**. Therefore, the good ionic cond. can be maintained even after the assembly of cell.

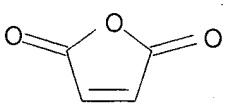
IT **114481-92-4**, Maleic anhydride-vinylidene fluoride copolymer
(methods for prepn. of microporous solid **electrolytes** for rechargeable **batteries**)

RN 114481-92-4 HCA

CN 2,5-Furandione, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

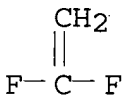
CM 1

CRN 108-31-6
CMF C4 H2 O3



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M010-38

CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST **battery** microporous solid **electrolyte** prepn

IT Polyvinyl acetals
(formals; methods for prepn. of microporous solid **electrolytes** for rechargeable **batteries**)

IT Molecular sieves
(mesoporous; methods for prepn. of microporous solid **electrolytes** for rechargeable **batteries**)

IT **Battery electrolytes**
Ionic conductivity
Secondary **batteries**
(methods for prepn. of microporous solid **electrolytes** for rechargeable **batteries**)

IT Carbon black, uses
Clay minerals
EPDM rubber
Fluoropolymers, uses
Mica-group minerals, uses
Nitrile rubber, uses
Phyllosilicate minerals
Polycarbonates, uses
Polycarbosilanes
Polyethers, uses
Polyimides, uses
Polymers, uses
Polyoxyalkylenes, uses
Polysulfones, uses
Polyurethanes, uses
Zeolites (synthetic), uses
(methods for prepn. of microporous solid **electrolytes** for rechargeable **batteries**)

IT 96-48-0, .gamma.-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 111-96-6, Diglyme 112-49-2, Triglyme 126-33-0, Sulfolane 143-24-8, Tetraglyme 505-22-6, 1,3-Dioxane 556-65-0, Lithium thiocyanate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 4437-85-8, Butylene carbonate 7429-90-5, Aluminum, uses 7440-50-8, Copper, uses 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 12057-17-9, Lithium manganese oxide limn2o4 12190-79-3, Cobalt lithium oxide colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 90076-65-6 132404-42-3
(methods for prepn. of microporous solid **electrolytes** for rechargeable **batteries**)

IT 67-63-0, Isopropanol, uses 79-41-4D, Methacrylic acid, esters, polymers 1309-48-4, Magnesium oxide, uses 1318-93-0, Montmorillonite, uses 9002-86-2, Polyvinyl chloride 9002-88-4, Polyethylene 9002-89-5, Polyvinyl alcohol 9002-93-1, Triton x 100 9003-07-0, Polypropylene 9003-27-4, Polyisobutylene 9003-29-6, Polybutylene 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 9012-09-3, Cellulose triacetate 12026-53-8, Paragonite 17831-71-9, Tetraethylene glycol diacrylate 24937-79-9, Polyvinylidene fluoride 25014-41-9, Polyacrylonitrile 25322-68-3, Peo 31900-57-9, Polydimethylsiloxane **114481-92-4**, Maleic anhydride-vinylidene fluoride copolymer
(methods for prepn. of microporous solid **electrolytes** for rechargeable **batteries**)

IT 56-81-5, Glycerol, uses 60-29-7, Ether, uses 64-17-5, Ethanol, uses 67-64-1, Acetone, uses 67-66-3, Chloroform, uses 67-68-5, Dmso, uses 68-12-2, Dmf, uses 75-05-8, Acetonitrile, uses 75-09-2, Dichloromethane, uses 96-47-9, 2-Methyltetrahydrofuran 107-21-1, Ethylene glycol, uses 108-94-1, Cyclohexanone, uses 109-99-9, Thf, uses 123-91-1, Dioxane, uses 127-19-5,

Dimethylacetamide 141-78-6, Ethyl acetate, uses 680-31-9, Hexamethylphosphoramide, uses 872-50-4, n-Methylpyrrolidone, uses 7732-18-5, Water, uses 25917-35-5, Hexanol 30899-19-5, Pentanol 35296-72-1, Butanol
(methods for prepn. of microporous solid **electrolytes** for rechargeable **batteries**)

IT 9003-18-3
(nitrile rubber, methods for prepn. of microporous solid **electrolytes** for rechargeable **batteries**)

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses
(porous; methods for prepn. of microporous solid **electrolytes** for rechargeable **batteries**)

L45 ANSWER 6 OF 14 HCA COPYRIGHT 2003 ACS

136:40202 Nonaqueous **battery** using **gel** **electrolyte** obtained by **gelling** nonaqueous **electrolyte** solution. Suzuki, Yusuke; Shibuya, Mashio (Sony Corporation, Japan). Eur. Pat. Appl. EP 1164653 A2 20011219, 28 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 2001-114359 20010613. PRIORITY: JP 2000-182276 20000616.

AB In a **gel electrolyte**, nonaq. **electrolyte** soln. obtained by dissolving **electrolyte** salt contg. Li in a nonaq. solvent is **gelled** by a matrix polymer including a copolymer as a main component which contains vinylidene fluoride as a monomer unit. The copolymer employed as the matrix polymer is carboxylic acid modified polyvinylidene fluoride into which a structure formed by esterifying a part or all of a carboxyl group, a carboxylic acid or an acetic anhydride structure is introduced. The carboxylic acid modified polyvinylidene fluoride can dissolve and retain therein a solvent of low viscosity having a low b.p. Therefore, the carboxylic acid modified polyvinylidene fluoride is used as a matrix polymer to improve the ionic cond. of the **gel electrolyte** at low temp. Thus, a low temp. characteristic is improved and a cyclic characteristic and a load characteristic are also improved.

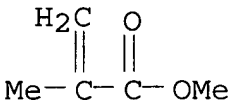
IT **25684-81-5**, Methyl methacrylate-vinylidene fluoride copolymer **161109-32-6**, Methyl maleate-vinylidene fluoride copolymer **380481-15-2**, Ethyl maleate-vinylidene fluoride copolymer **380481-16-3**, Monopropyl maleate-vinylidene fluoride copolymer **380481-17-4**, Monobutyl maleate-vinylidene fluoride copolymer **380481-37-8**, Monoethyl maleate-vinylidene fluoride copolymer
(nonaq. **battery** using **gel electrolyte** obtained by **gelling** nonaq. **electrolyte** soln.)

RN 25684-81-5 HCA

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

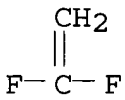
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

CRN 75-38-7
CMF C2 H2 F2

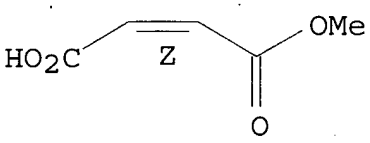


RN 161109-32-6 HCA
CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

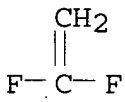
CRN 3052-50-4
CMF C5 H6 O4

Double bond geometry as shown.



CM 2

CRN 75-38-7
CMF C2 H2 F2

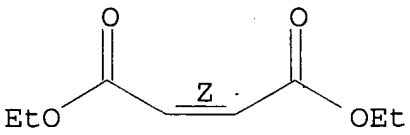


RN 380481-15-2 HCA
CN 2-Butenedioic acid (2Z)-, diethyl ester, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

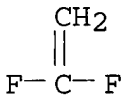
CRN 141-05-9
CMF C8 H12 O4

Double bond geometry as shown.



CM 2

CRN 75-38-7
CMF C2 H2 F2

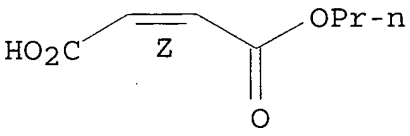


RN 380481-16-3 HCA
CN 2-Butenedioic acid (2Z)-, monopropyl ester, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

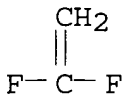
CRN 925-03-1
CMF C7 H10 O4

Double bond geometry as shown.



CM 2

CRN 75-38-7
CMF C2 H2 F2



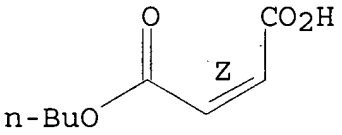
RN 380481-17-4 HCA

CN 2-Butenedioic acid (2Z)-, monobutyl ester, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

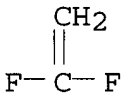
CRN 925-21-3
CMF C8 H12 O4

Double bond geometry as shown.



CM 2

CRN 75-38-7
CMF C2 H2 F2

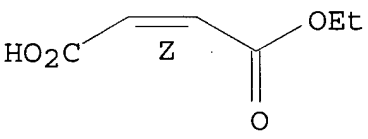


RN 380481-37-8 HCA
CN 2-Butenedioic acid (2Z)-, monoethyl ester, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

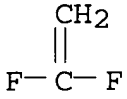
CRN 3990-03-2
CMF C6 H8 O4

Double bond geometry as shown.



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M010-40
ICS H01M006-22
CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **battery** nonaq **gel electrolyte**
IT Transition metal oxides
(lithiated; nonaq. **battery** using **gel electrolyte** obtained by **gelling** nonaq. **electrolyte** soln.)
IT Secondary **batteries**
(lithium; nonaq. **battery** using **gel electrolyte** obtained by **gelling** nonaq. **electrolyte** soln.)
IT Polymerization
(matrix; nonaq. **battery** using **gel electrolyte** obtained by **gelling** nonaq. **electrolyte** soln.)
IT **Battery electrolytes**
(nonaq. **battery** using **gel electrolyte** obtained by **gelling** nonaq. **electrolyte** soln.)
IT Carbonaceous materials (technological products)
(nonaq. **battery** using **gel electrolyte** obtained by **gelling** nonaq. **electrolyte** soln.)
IT Fluoropolymers, uses
(nonaq. **battery** using **gel electrolyte** obtained by **gelling** nonaq. **electrolyte** soln.)
IT Lithium alloy, base
(nonaq. **battery** using **gel electrolyte** obtained by **gelling** nonaq. **electrolyte** soln.)
IT 75-38-7D, polymers with maleate salts and maleic anhydride 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-31-6D, 2,5-Furandione, polymers with maleate salts and vinylidene fluoride, uses 110-16-7D, Maleate-maleic anhydride-vinylidene fluoride copolymer, salts, polymers with maleic anhydride and vinylidene fluoride, uses 623-53-0, Ethyl methyl carbonate 7429-90-5, Aluminum, uses 7439-93-2, Lithium, uses 7440-50-8, Copper, uses 12190-79-3, Cobalt lithium oxide colio2 21324-40-3, Lithium hexafluorophosphate 380481-18-5, Cobalt lithium oxide (Co0.2Li0.7O2) 380481-19-6
(nonaq. **battery** using **gel electrolyte** obtained by **gelling** nonaq. **electrolyte** soln.)
IT 7782-42-5, Graphite, uses 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer **25684-81-5**, Methyl methacrylate-vinylidene fluoride copolymer **161109-32-6**, Methyl maleate-vinylidene fluoride copolymer **380481-15-2**,

Ethyl maleate-vinylidene fluoride copolymer **380481-16-3**, Monopropyl maleate-vinylidene fluoride copolymer **380481-17-4**, Monobutyl maleate-vinylidene fluoride copolymer **380481-37-8**, Monoethyl maleate-vinylidene fluoride copolymer
(nonaq. **battery** using **gel electrolyte** obtained by **gelling** nonaq. **electrolyte** soln.)

IT 24937-79-9, Pvdf
(nonaq. **battery** using **gel electrolyte** obtained by **gelling** nonaq. **electrolyte** soln.)

L45 ANSWER 7 OF 14 HCA COPYRIGHT 2003 ACS

133:46207 Microporous solid **electrolytes** for lithium secondary **batteries**. Jang, Dong Hun; Kim, Sa Heum; Kim, Han Jun; Hong, Sung Min (Finecell Co., Ltd., S. Korea). PCT Int. Appl. WO 2000038263 A1 20000629, 46 pp. DESIGNATED STATES: W: CN, JP, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1999-KR798 19991221. PRIORITY: KR 1998-57031 19981222.

AB The present invention relates to a solid **electrolyte** having a good cond. to lithium ion by allowing the liq. components and lithium salts to be absorbed into the **electrolyte** film contg. an absorbent added at the time of its prepn. and having a porosity, a process for prepg. the same and a rechargeable lithium cell using the same as an **electrolyte**. As the absorbent, inorg. materials having not more than 40 .mu.m of particle size can be used. As the polymer binder, any binder whose soly. against the liq. **electrolyte** is small can be used. A wet process can introduce the porous structure of the **electrolyte** film. The solid **electrolyte** according to the present invention has the ionic cond. of more than approx. 1 to 3 x 10-3 S/cm at room temp. and low reactivity to lithium metal. The cell is fabricated from the solid **electrolyte** together with electrodes by lamination or pressing methods and, the liq. **electrolyte**, which is decompd. by moisture, is introduced to a cell just before packaging. Therefore, the solid **electrolyte** according to the present invention is not affected by the humidity and temp. conditions during the manufg. of the **electrolyte** film. In addn., the solid **electrolyte** according to the present invention has high thermal, mech. and electrochem. stability, and thus is suitable as an **electrolyte** for rechargeable lithium cells.

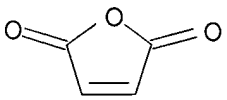
IT **114481-92-4**, Maleic anhydride-Vinylidene fluoride copolymer
(binder; microporous solid **electrolytes** for lithium secondary **batteries**)

RN 114481-92-4 HCA

CN 2,5-Furandione, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

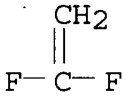
CM 1

CRN 108-31-6
CMF C4 H2 O3



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M010-36
CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST lithium **battery** microporous solid **electrolyte**
IT Cellulose pulp
Cork
(absorbent; microporous solid **electrolytes** for lithium secondary **batteries**)
IT Polyurethanes, uses
Zeolites (synthetic), uses
(absorbent; microporous solid **electrolytes** for lithium secondary **batteries**)
IT Synthetic rubber, uses
(acrylic-acrylonitrile-butadiene, binder; microporous solid **electrolytes** for lithium secondary **batteries**)
IT EPDM rubber
Fluoropolymers, uses
Polycarbonates, uses
Polyethers, uses
Polyimides, uses
Polymers, uses
Polyoxyalkylenes, uses
Polysulfones, uses
(binder; microporous solid **electrolytes** for lithium secondary **batteries**)
IT Wood
(flour, absorbent; microporous solid **electrolytes** for lithium secondary **batteries**)
IT Polyvinyl acetals
(formals, binder; microporous solid **electrolytes** for lithium secondary **batteries**)
IT Secondary **batteries**
(lithium; microporous solid **electrolytes** for lithium secondary **batteries**)

IT Molecular sieves
(mesoporous, absorbent; microporous solid **electrolytes** for lithium secondary **batteries**)

IT Absorbents
Battery electrolytes
(microporous solid **electrolytes** for lithium secondary **batteries**)

IT Clays, uses
Mica-group minerals, uses
Minerals, uses
(particles, absorbent; microporous solid **electrolytes** for lithium secondary **batteries**)

IT Binders
(polymers; microporous solid **electrolytes** for lithium secondary **batteries**)

IT 9002-88-4 9003-07-0, Polypropylene 9003-53-6, Polystyrene 9004-34-6, Cellulose, uses
(absorbent; microporous solid **electrolytes** for lithium secondary **batteries**)

IT 9002-86-2, Pvc 9002-89-5, Polyvinyl alcohol 9003-21-8, 2-Propenoic acid, methyl ester, homopolymer 9003-27-4, Polyisobutylene 9011-14-7, Pmma 9011-17-0, Vinylidene fluoride-hexafluoropropylene copolymer 9012-09-3, Cellulose triacetate 9016-00-6, Polydimethylsiloxane 17831-71-9, Tetraethyleneglycol diacrylate 24937-79-9, Pvdf 25014-41-9, Polyacrylonitrile 25322-68-3 26967-02-2, Poly(butylidene) **114481-92-4**, Maleic anhydride-Vinylidene fluoride copolymer
(binder; microporous solid **electrolytes** for lithium secondary **batteries**)

IT 67-68-5, Dmso, uses 68-12-2, uses 96-47-9, 2-Methyltetrahydrofuran 96-48-0, .gamma.-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, uses 111-96-6, Diglyme 112-49-2, Triglyme 126-33-0 143-24-8, Tetraglyme 505-22-6, 1,3-Dioxane 556-65-0, Lithium thiocyanate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 12162-79-7, Lithium manganese oxide limno2 12190-79-3, Cobalt lithium oxide colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 90076-65-6 132404-42-3
(microporous solid **electrolytes** for lithium secondary **batteries**)

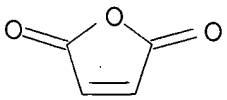
IT 56-81-5, 1,2,3-Propanetriol, uses 60-29-7, Ether, uses 64-17-5, Ethanol, uses 67-64-1, Acetone, uses 67-66-3, uses 71-36-3, Butanol, uses 75-05-8, Acetonitrile, uses 75-09-2, Dichloromethane, uses 107-21-1, 1,2-Ethanediol, uses 108-94-1, Cyclohexanone, uses 123-91-1, Dioxane, uses 127-19-5, Dimethyl acetamide 141-78-6, Acetic acid ethyl ester, uses 680-31-9, Hexamethylphosphoramide, uses 872-50-4, uses 7732-18-5, Water, uses 25917-35-5, Hexanol 30899-19-5, Pentanol
(microporous solid **electrolytes** for lithium secondary

batteries)
IT 1318-93-0, Montmorillonite, uses 12026-53-8, Paragonite (particles, absorbent; microporous solid **electrolytes** for lithium secondary **batteries**)
IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses (porous, absorbent; microporous solid **electrolytes** for lithium secondary **batteries**)

L45 ANSWER 8 OF 14 HCA COPYRIGHT 2003 ACS
133:46206 Solid **electrolytes** using absorbent for rechargeable lithium **batteries**. Jang, Dong Hun; Kim, Sa Heum; Kim, Han Jun; Oh, Seung Mo (Finecell Co., Ltd., S. Korea). PCT Int. Appl. WO 2000038262 A1 20000629, 37 pp. DESIGNATED STATES: W: CN, JP, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1999-KR797 19991221. PRIORITY: KR 1998-57030 19981222.
AB The present invention relates to a solid **electrolyte** having cond. to lithium ion by providing spaces for liq. component and lithium salts to be absorbed by way of introducing an absorbent to the inside of an **electrolyte** film, a process for prepg. the same and a rechargeable lithium cell using the same. As the absorbent, polymers or inorg. materials having not more than 40 .mu.m of particle size can be used. As the polymer binder, any binder whose soly. against the liq. **electrolyte** is small can be used. The solid **electrolyte** according to the present invention has the ionic cond. of more than approx. 10-4 S/cm at room temp. The cell is fabricated from the solid **electrolyte** together with electrodes by lamination or pressing methods. The liq. **electrolyte**, which is decompd. by moisture, is introduced to a cell just before packaging. Therefore, the solid **electrolyte** according to the present invention is not affected by the humidity and temp. conditions during the manufg. of the **electrolyte** film. In addn., the solid **electrolyte** according to the present invention has high mech. strength and little reactivity to lithium metal, and thus is suitable as an **electrolyte** for rechargeable lithium cells.
IT **114481-92-4**, Maleic anhydride-vinylidene fluoride copolymer (solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
RN 114481-92-4 HCA
CN 2,5-Furandione, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

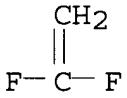
CM 1

CRN 108-31-6
CMF C4 H2 O3



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M010-36
CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST lithium **battery electrolyte** absorbent
IT Polysiloxanes, uses
(Me; solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
IT Synthetic rubber, uses
(acrylonitrile-butylidene; solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
IT Wood
(flour; solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
IT Polyvinyl acetals
(formals; solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
IT Secondary **batteries**
(lithium; solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
IT Molecular sieves
(mesoporous; solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
IT Clays, uses
Mica-group minerals, uses
Minerals, uses
Zeolites (synthetic), uses
(particles; solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
IT Cork
(powder; solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
IT Absorbents
Battery electrolytes
Cellulose pulp

(solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
IT Carbon black, uses
(solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
IT EPDM rubber
(solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
IT Fluoropolymers, uses
(solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
IT Nitrile rubber, uses
(solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
IT Polycarbonates, uses
(solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
IT Polyethers, uses
(solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
IT Polyimides, uses
(solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
IT Polymers, uses
(solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
IT Polyoxyalkylenes, uses
(solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
IT Polysulfones, uses
(solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
IT Polyurethanes, uses
(solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
IT 9003-18-3
(nitrile rubber, solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
IT 1318-93-0, Montmorillonite, uses 12026-53-8, Paragonite
(particles; solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses
(porous, particles; solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
IT 67-68-5, Dmso, uses 68-12-2, uses 96-47-9, 2-Methyltetrahydrofuran 96-48-0, .gamma.-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, uses 111-96-6, Diglyme 112-49-2, Triglyme 126-33-0 143-24-8, Tetraglyme 556-65-0, Lithium thiocyanate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 646-06-0, 1,3-Dioxolane 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 12190-79-3, Cobalt lithium oxide

colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 90076-65-6 132404-42-3
(solid **electrolytes** using absorbent for rechargeable lithium **batteries**)

IT 9002-86-2, Polyvinyl chloride 9002-88-4 9002-89-5, Polyvinyl alcohol 9003-07-0, Polypropylene 9003-27-4, Polyisobutylene 9003-53-6, Polystyrene 9004-34-6, Cellulose, uses 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 9012-09-3, Cellulose triacetate 17831-71-9, Tetraethylene glycol diacrylate 24937-79-9, Polyvinylidene fluoride 25014-41-9, Polyacrylonitrile 25322-68-3 26967-02-2, Poly(butylidene) **114481-92-4**, Maleic anhydride-vinylidene fluoride copolymer
(solid **electrolytes** using absorbent for rechargeable lithium **batteries**)

L45 ANSWER 9 OF 14 HCA COPYRIGHT 2003 ACS

130:111360 Vinylidene fluoride copolymer for **gel**-form solid **electrolyte** formation in **battery**. Katsurao, Takumi; Horie, Katsuo; Nagai, Aisaku; Ichikawa, Yukio (Kureha Kagaku Kogyo Kabushiki Kaisha, Japan). PCT Int. Appl. WO 9905191 A1 19990204, 37 pp. DESIGNATED STATES: W: CA, KR, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (Japanese). CODEN: PIXXD2. APPLICATION: WO 1998-JP3292 19980723. PRIORITY: JP 1997-212726 19970724.

AB A solid polymer **electrolyte** having improved ionic cond., adhesion to a collector base, and heat resistance, useful for improving the properties of non-water-base **batteries** such as lithium ion **batteries**, is formed from a crosslinked vinylidene fluoride copolymer comprising 50 to 97 mol% of vinylidene fluoride units and 0.1 to 5 mol% of units derived from either a monoester of an unsatd. dibasic acid or an epoxy vinyl monomer. Thus, monomethyl maleate 8.0 g, vinylidene fluoride 372 g, and hexafluoropropene 28 g was suspension-copolymd., then 10 g of the copolymer was dissolved in THF 90 g, and 1.5 g of crosslinking agent hexamethylenediamine was added, which was mixed with 4.5 g LiPF6 in soln., applied on glass plate, dried, to give a solid **electrolyte** film, showing ionic cond. 7.9 X 10-3 S/cm and shape-maintaining temp. 100.degree..

IT **219748-63-7P**, Monomethyl maleate-vinylidene fluoride-hexafluoropropene copolymer **219748-65-9P**, Monomethyl maleate-vinylidene fluoride-hexafluoropropene-hexamethylenediamine copolymer **219748-67-1P**, Monomethyl maleate-vinylidene fluoride-hexafluoropropene-triallyl isocyanurate copolymer
(vinylidene fluoride copolymer for **gel**-form solid **electrolyte** in **battery**)

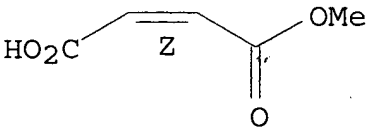
RN 219748-63-7 HCA

CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with 1,1-difluoroethene and 1,1,2,3,3,3-hexafluoro-1-propene (9CI) (CA INDEX NAME)

CM 1

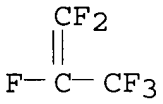
CRN 3052-50-4
CMF C5 H6 O4

Double bond geometry as shown.



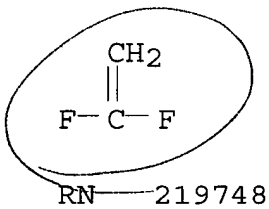
CM 2

CRN 116-15-4
CMF C3 F6



CM 3

CRN 75-38-7
CMF C2 H2 F2

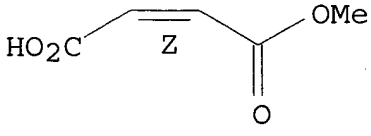


RN 219748-65-9 HCA
CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with 1,1-difluoroethene, 1,1,2,3,3,3-hexafluoro-1-propene and 1,6-hexanediamine (9CI) (CA INDEX NAME)

CM 1

CRN 3052-50-4
CMF C5 H6 O4

Double bond geometry as shown.



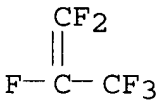
CM 2

CRN 124-09-4
CMF C6 H16 N2

$H_2N-(CH_2)_6-NH_2$

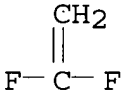
CM 3

CRN 116-15-4
CMF C3 F6



CM 4

CRN 75-38-7
CMF C2 H2 F2

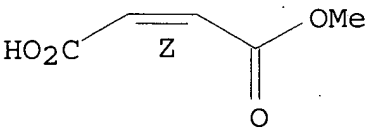


RN 219748-67-1 HCA
CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with 1,1-difluoroethene, 1,1,2,3,3,3-hexafluoro-1-propene and 1,3,5-tri-2-propenyl-1,3,5-triazine-2,4,6(1H,3H,5H)-trione (9CI) (CA INDEX NAME)

CM 1

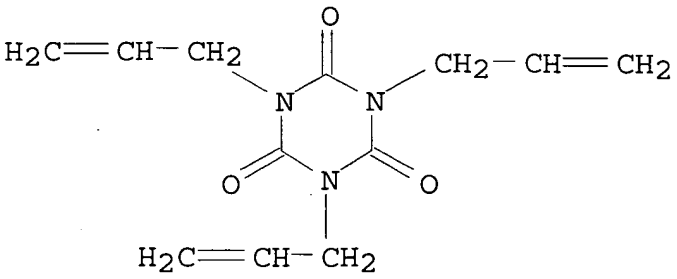
CRN 3052-50-4
CMF C5 H6 O4

Double bond geometry as shown.



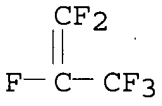
CM 2

CRN 1025-15-6
CMF C12 H15 N3 O3



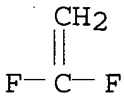
CM 3

CRN 116-15-4
CMF C3 F6



CM 4

CRN 75-38-7
CMF C2 H2 F2



IC ICM C08F214-22
ICS C08L027-16; H01B001-12; H01M010-40
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): **52**
ST vinylidene fluoride copolymer **gel** solid **electrolyte battery**
IT **Battery** anodes
Battery cathodes
Battery electrodes
(vinylidene fluoride copolymer for **gel**-form solid **electrolyte** in **battery**)
IT Fluoropolymers, uses
(vinylidene fluoride copolymer for **gel**-form solid **electrolyte** in **battery**)

IT **219748-63-7P**, Monomethyl maleate-vinylidene fluoride-hexafluoropropene copolymer 219748-64-8P, Allyl glycidyl ether-vinylidene fluoride-chlorotrifluoroethylene copolymer **219748-65-9P**, Monomethyl maleate-vinylidene fluoride-hexafluoropropene-hexamethylenediamine copolymer 219748-66-0P, Allyl glycidyl ether-vinylidene fluoride-chlorotrifluoroethylene-hexamethylenediamine copolymer **219748-67-1P**, Monomethyl maleate-vinylidene fluoride-hexafluoropropene-triallyl isocyanurate copolymer 219748-68-2P, Allyl glycidyl ether-vinylidene fluoride-chlorotrifluoroethylene-triallyl isocyanurate copolymer
(vinylidene fluoride copolymer for **gel**-form solid **electrolyte** in **battery**)

IT 12190-79-3, Lithium cobalt oxide (LiCoO2) 21324-40-3, Lithium phosphorus fluoride (LiPF6)
(vinylidene fluoride copolymer for **gel**-form solid **electrolyte** in **battery**)

L45 ANSWER 10 OF 14 HCA COPYRIGHT 2003 ACS

130:25919 Dissolution of poly(vinylidene fluoride) resins in organic solvents for use as nonaqueous **battery** binders. Katsurao, Takumi; Horie, Katsuo; Nagai, Aisaku (Kureha Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 10298298 A2 19981110 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-118613 19970423.

AB In the process, powd. poly(vinylidene fluoride) (PVF) is dispersed first in a poor solvent and then stirred in a good solvent. After the PVF is dissolved, powd. materials for **battery** electrodes are dispersed in the soln. Thus, 10 g PVF ([.eta.] 2.1 dL/g) was dispersed in 20 g Me2CO, mixed with 80 g N-methyl-2-pyrrolidone (NMP) at once and heated to 50.degree. to give a high-concn. soln., to which LiCoO2 300, carbon black 23, and NMP 23 g were added and dispersed to give a slurry for making electrode.

IT **161109-32-6**, Monomethyl maleate-vinylidene fluoride copolymer
(dissoln. of poly(vinylidene fluoride) resins in org. solvents for use as nonaq. **battery** binders)

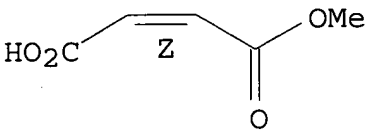
RN 161109-32-6 HCA

CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

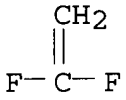
CRN 3052-50-4
CMF C5 H6 O4

Double bond geometry as shown.



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM C08J003-09
ICS B01F001-00; C08F214-22; C08K003-04; C08L027-16; H01M004-02; H01M004-62
CC 38-2 (Plastics Fabrication and Uses)
Section cross-reference(s): **52**
ST polyvinylidene fluoride **battery** binder dissolving method; acetone poor solvent PVF binder dissoln
IT Binders
Dissolution
(dissoln. of poly(vinylidene fluoride) resins in org. solvents for use as nonaq. **battery** binders)
IT Fluoropolymers, uses
(dissoln. of poly(vinylidene fluoride) resins in org. solvents for use as nonaq. **battery** binders)
IT **Battery** electrodes
(nonaq., binders; dissoln. of poly(vinylidene fluoride) resins in org. solvents for use as nonaq. **battery** binders)
IT 7440-44-0, Carbon, processes
(anode active mass; dissoln. of poly(vinylidene fluoride) resins in org. solvents for use as nonaq. **battery** binders)
IT 12190-79-3, Cobalt lithium oxide (CoLiO2)
(cathode active mass; dissoln. of poly(vinylidene fluoride) resins in org. solvents for use as nonaq. **battery** binders)
IT 67-64-1, Acetone, uses 109-99-9, THF, uses 872-50-4, N-Methyl-2-Pyrrolidone, uses
(dissoln. of poly(vinylidene fluoride) resins in org. solvents for use as nonaq. **battery** binders)
IT 24937-79-9, Poly(vinylidene fluoride) **161109-32-6**, Monomethyl maleate-vinylidene fluoride copolymer
(dissoln. of poly(vinylidene fluoride) resins in org. solvents for use as nonaq. **battery** binders)

L45 ANSWER 11 OF 14 HCA COPYRIGHT 2003 ACS

129:233147 Secondary lithium **batteries** with mixed polymer binders for electrodes. Akabane, Naoto; Kitagawa, Satoshi; Uenae, Keiichiro (Hitachi Maxell, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 10255760 A2 19980925 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-81987 19970314.

AB The **batteries** use cathodes and/or anodes having an active mass-binder mixt. applied on a conductive substrate, where the binder contains modified copolymers of fluoromonomers contg. vinylidene fluoride and monoesters of unsatd. dicarboxylic acids and a vinylidene fluoride based polymer.

IT **161109-32-6**
(compns. of fluoropolymer binder mixts. for electrodes in secondary lithium **batteries**)

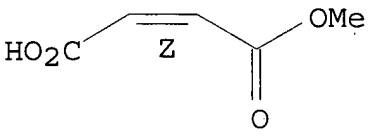
RN 161109-32-6 HCA

CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

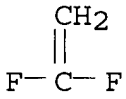
CRN 3052-50-4
CMF C5 H6 O4

Double bond geometry as shown.



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M004-02
ICS H01M004-62; H01M010-40

CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium **battery** electrode fluoropolymer binder

IT **Battery** electrodes
(compns. of fluoropolymer binder mixts. for electrodes in secondary lithium **batteries**)

IT Fluoropolymers, uses
(compns. of fluoropolymer binder mixts. for electrodes in secondary lithium **batteries**)

IT Secondary **batteries**
(lithium; compns. of fluoropolymer binder mixts. for electrodes in secondary lithium **batteries**)
IT 7782-42-5, Graphite, uses 24937-79-9, Polyvinylidene fluoride 39300-70-4, Lithium nickel oxide **161109-32-6**
(compns. of fluoropolymer binder mixts. for electrodes in secondary lithium **batteries**)

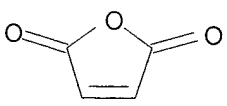
L45 ANSWER 12 OF 14 HCA COPYRIGHT 2003 ACS
127:265531 Binders for **battery** and cell electrodes and manufacture of binders and electrodes. Ohashi, Kazuyoshi; Miyaki, Yoshiyuki; Goto, Kuniyuki (Elf Atochem S.A., Fr.; Ohashi, Kazuyoshi; Miyaki, Yoshiyuki; Goto, Kuniyuki). PCT Int. Appl. WO 9732347 A1 19970904, 14 pp. DESIGNATED STATES: W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1997-EP998 19970227. PRIORITY: JP 1996-39672 19960227.

AB The electrodes comprise a layer of an electrode-forming substance comprising an electrode activator and a binder coated or bonded to a surface of a metallic collect, the binder being a fluoroplastic grafted with .gtoreq.1 acrylic polymer consisting mainly of .gtoreq.1 monomer unit selected from esters of acrylic acid and/or methacrylic acid. The content of the acrylic polymer in the binder is .apprx.0.1-20 wt.%.

IT **196094-08-3P 196094-09-4P**
(binders for **battery** and cell electrodes)
RN 196094-08-3 HCA
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1,1-difluoroethene and 2,5-furandione (9CI) (CA INDEX NAME)

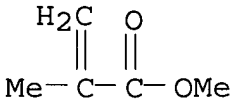
CM 1

CRN 108-31-6
CMF C4 H2 O3



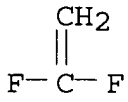
CM 2

CRN 80-62-6
CMF C5 H8 O2



CM 3

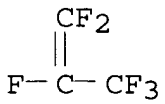
CRN 75-38-7
CMF C2 H2 F2



RN 196094-09-4 HCA
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1,1-difluoroethene, 2,5-furandione and 1,1,2,3,3,3-hexafluoro-1-propene (9CI) (CA INDEX NAME)

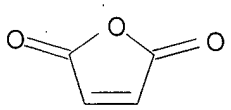
CM 1

CRN 116-15-4
CMF C3 F6



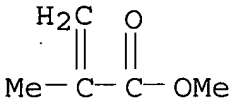
CM 2

CRN 108-31-6
CMF C4 H2 O3



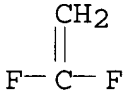
CM 3

CRN 80-62-6
CMF C5 H8 O2



CM 4

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M004-62
ICS C09D127-16
CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 37
ST **battery** electrode binder grafted fluoroplastic; electrode binder acrylic polymer grafted fluoroplastic
IT **Battery** electrodes
(binders for and manuf. of)
IT Fluoropolymers, uses
(binders for **battery** and cell electrodes)
IT Fluoropolymers, uses
(graft; binders for **battery** and cell electrodes)
IT **196094-08-3P 196094-09-4P**
(binders for **battery** and cell electrodes)
IT 12190-79-3, Cobalt lithium oxide (CoLiO2)
(binders for **battery** cathodes of)
IT 94-36-0, Benzoylperoxide, uses 105-64-6, Diisopropylperoxydicarbonate 614-45-9, tert-Butylperoxybenzoate
(in prepn. of binders for **battery** and cell electrodes)

L45 ANSWER 13 OF 14 HCA COPYRIGHT 2003 ACS
126:158262 Epoxy group-containing vinylidene fluoride copolymer and its application to secondary **battery**. Kashio, Hidetora; Horie, Katsuo; Suzuki, Fujio (Kureha Kagaku Kogyo Kabushiki Kaisha, Japan). Eur. Pat. Appl. EP 751157 A1 19970102, 13 pp. DESIGNATED STATES: R: DE, FR, GB, NL. (English). CODEN: EPXXDW. APPLICATION: EP 1996-303282 19960510. PRIORITY: JP 1995-184961 19950629.
AB A vinylidene fluoride copolymer having a relatively high mol. wt. is formed by copolymg. (a) vinylidene fluoride as a principal component, (b) a small amt. of epoxy group-contg. monomer, and (c) an optional component, such as an unsatd. dibasic acid monoester functioning as a curing agent for the epoxy group. When cured with an optional epoxy curing agent, the vinylidene fluoride copolymer

provides a cured product having good adhesion with a metal, and also showing excellent solvent resistance and chem. resistance. The vinylidene fluoride copolymer is particularly suitable for a binder for producing an electrode for non-aq. solvent-type secondary **battery**.

IT **161109-32-6P**
(epoxy group-contg. vinylidene fluoride copolymers and use in secondary **batteries**)

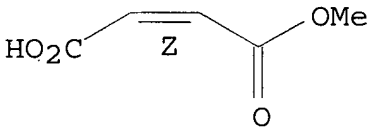
RN 161109-32-6 HCA

CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

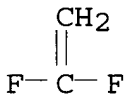
CRN 3052-50-4
CMF C5 H6 O4

Double bond geometry as shown.



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM C08F214-22
ICS H01M004-62

CC 37-3 (Plastics Manufacture and Processing)
Section cross-reference(s): **52**

ST vinylidene fluoride copolymer epoxy contg manuf; secondary **battery** electrode vinylidene fluoride copolymer; metal adhesion vinylidene fluoride copolymer

IT Secondary **batteries**
(epoxy group-contg. vinylidene fluoride copolymers and use in secondary **batteries**)

IT Fluoropolymers, preparation
Fluoropolymers, preparation
(epoxy; epoxy group-contg. vinylidene fluoride copolymers and use in secondary **batteries**)

IT Epoxy resins, preparation
Epoxy resins, preparation

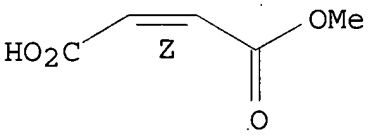
(fluorine-contg.; epoxy group-contg. vinylidene fluoride copolymers and use in secondary **batteries**)
IT 186773-66-0P 186773-69-3P 186773-70-6P
(cured fluoropolymer; epoxy group-contg. vinylidene fluoride copolymers and use in secondary **batteries**)
IT **161109-32-6P**
(epoxy group-contg. vinylidene fluoride copolymers and use in secondary **batteries**)
IT 186773-65-9P, Allyl glycidyl ether-vinylidene fluoride copolymer
186773-67-1P 186773-68-2P
(epoxy group-contg. vinylidene fluoride copolymers and use in secondary **batteries**)
IT 7440-50-8, Copper, properties
(foil, fluoropolymer adhesion to; epoxy group-contg. vinylidene fluoride copolymers and use in secondary **batteries**)

L45 ANSWER 14 OF 14 HCA COPYRIGHT 2003 ACS
122:214845 Vinylidene fluoride copolymer and binder composition containing the copolymer for non-aqueous solvent type secondary **battery**.. Takahashi, Yosuke; Suzuki, Fujio; Iwasaki, Takao (Kureha Kagaku Kogyo K. K., Japan). Eur. Pat. Appl. EP 601754 A1 19940615, 12 pp. DESIGNATED STATES: R: DE, FR, GB, NL. (English). CODEN: EPXXDW. APPLICATION: EP 1993-309488 19931129. PRIORITY: JP 1992-345141 19921202.
AB A vinylidene fluoride copolymer contg. a carboxyl group or a carbonate group is formed by copolymg. .gtoreq.80% vinylidene fluoride (I) with a relatively small amt. of an unsatd. dibasic acid monoester, e.g. maleic acid monomethyl ester (II), or vinylene carbonate. The copolymer has a large adhesion to various substrates or fillers and is excellent in chem. resistance, so that it is useful as a basic substance constituting a binder as in the title use, an adhesive, a paint, etc. Aq. suspension polymn. of I with II (100:1.01) gave polymer having CO group content 1.2 .times. 10-4 mol/g, and this polymer/N-methyl-2-pyrrolidone (10:90) was compounded with coke powder to give an electrode-forming compn. for lamination with Cu foil.
IT **161109-32-6P**
(binder compn. contg. the copolymer for non-aq. solvent type secondary **battery**)
RN 161109-32-6 HCA
CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

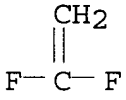
CRN 3052-50-4
CMF C5 H6 O4

Double bond geometry as shown.



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM C08F214-22
ICS C08L027-16; H01M006-00
CC 35-4 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 38, **72**
ST vinylidene fluoride copolymer binder electrode; vinylene carbonate copolymer binder electrode; methyl maleate vinylidene fluoride copolymer; secondary **battery** vinylidene fluoride copolymer binder
IT Binding materials
(compn. contg. vinylidene fluoride copolymer for non-aq. solvent type secondary **battery**)
IT Electrodes
(**battery**, binder compn. contg. vinylidene fluoride copolymer for non-aq. solvent type)
IT **161109-32-6P** 161747-35-9P 162231-09-6P
(binder compn. contg. the copolymer for non-aq. solvent type secondary **battery**)
IT 7440-44-0, Carbon, uses
(powder; binder compn. contg. vinylidene fluoride copolymer for non-aq. solvent type secondary **battery**)

=> d l46 1-10 cbib abs hitstr hitind

L46 ANSWER 1 OF 10 HCA COPYRIGHT 2003 ACS
136:250248 Electrode active mass agents containing vinylidene fluoride-containing polymer binders, electrode structure, and nonaqueous electrochemical devices. Katsurao, Takumi; Sakuma, Mitsuyasu; Sato, Hiroshi; Nagai, Aisaku (Kureha Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002075374 A2 20020315, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-262318 20000831.
AB The electrode active mass agents contain powdery electrode main components, powder elec. conductive materials, vinylidene

fluoride-contg. polymers, and solvents, and are prepd. by mixing each components, wherein the elec. conductive materials and optionally the electrode main components are previously impregnated with solns. contg. the polymers and having viscosity .ltoreq.100 cPs at 30.degree., or the solvents, and then further mixed with the other components. An electrode structure comprises an electrode active mass which is prepd. by applying and drying the active mass agent. Also claimed are nonaq. electrochem. devices, e.g., **batteries** and double-layer capacitors, comprising the electrode structure which contain activated carbon powder as the electrode main component. The mixing process prevents gelation of the active mass agents, so that the formed active mass show high adhesion with current collectors when being used in the **batteries**.

IT **219748-63-7**
(binder; electrode active mass prepd. by mixing vinylidene fluoride-contg. polymer binders with powdery electrode components for nonaq. electrochem. devices)

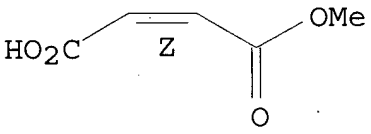
RN 219748-63-7 HCA

CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with 1,1-difluoroethene and 1,1,2,3,3,3-hexafluoro-1-propene (9CI) (CA INDEX NAME)

CM 1

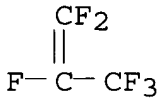
CRN 3052-50-4
CMF C5 H6 O4

Double bond geometry as shown.



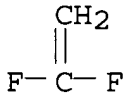
CM 2

CRN 116-15-4
CMF C3 F6



CM 3

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M004-62
ICS H01M004-02; H01M010-40
CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 76
ST **battery** electrode manuf binder vinylidene fluoride polymer mixing; elec double layer capacitor electrode manuf binder mixing; activated carbon electrode manuf binder polymer mixing
IT **Battery** electrodes
Mixing
Primary **batteries**
Secondary **batteries**
(electrode active mass prepd. by mixing vinylidene fluoride-contg. polymer binders with powdery electrode components for nonaq. electrochem. devices)
IT 24937-79-9, Vinylidene fluoride homopolymer **219748-63-7**
(binder; electrode active mass prepd. by mixing vinylidene fluoride-contg. polymer binders with powdery electrode components for nonaq. electrochem. devices)

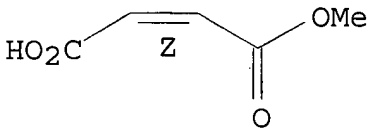
L46 ANSWER 2 OF 10 HCA COPYRIGHT 2003 ACS
135:183250 Fluoropolymer binders for nonaqueous **electrolyte batteries**, electrode active mass, and nonaqueous **electrolyte batteries**. Ino, Tadashi; Ichikawa, Kenji; Nishino, Takatomo; Asano, Michio (Daikin Industries, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001223011 A2 20010817, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-33495 20000210.
AB The binders comprise vinylidene fluoride 30-80, tetrafluoroethylene 10-50, vinyl ether-type monomer 3-30, and their copolymerizable monomer 0-10 mol% and have storage modulus (E') .ltoreq.3.0 .times. 109 dyne.cm-2 detd. by measuring dynamic viscoelasticity at 25.degree.. Preferably, the copolymerizable monomers contain S, N, O, F, Cl, Br, and/or I. Preferable vinyl ether-type monomers are CR1R2:CR3OCxHyFz, CR1R2:CR3O(CpHqFrO)sCxHyFz, and/or CR1R2:CR3O[CR4R5C(CR7R8R9)R6O]tCxHyFz (R1-9 = H, Cl, F; x, p, s, t = integer of .gtoreq.1; y, z, q, r = integer of .gtoreq.0; y + z = 2x + 1; q + r = 2p + 1). Also claimed are electrode active materials comprising the binder and nonaq. **electrolyte batteries** comprising the active materials. The binders are chem. stable and flexible.
IT **355015-69-9P 355015-70-2P**
(flexible and chem. stable fluoropolymer binders in electrode active materials for nonaq. **electrolyte** secondary **batteries**)
RN 355015-69-9 HCA
CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with

1,1-difluoroethene, tetrafluoroethene and trifluoro(trifluoromethoxy)ethene (9CI) (CA INDEX NAME)

CM 1

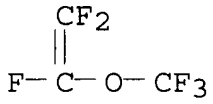
CRN 3052-50-4
CMF C5 H6 O4

Double bond geometry as shown.



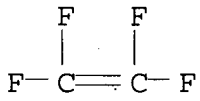
CM 2

CRN 1187-93-5
CMF C3 F6 O



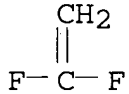
CM 3

CRN 116-14-3
CMF C2 F4



CM 4

CRN 75-38-7
CMF C2 H2 F2

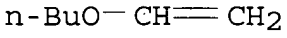


RN 355015-70-2 HCA
CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with 1,1-difluoroethene, (ethenyloxy)butanol, tetrafluoroethene and

trifluoro(trifluoromethoxy)ethene (9CI) (CA INDEX NAME)

CM 1

CRN 42978-84-7
CMF C6 H12 O2
CCI IDS

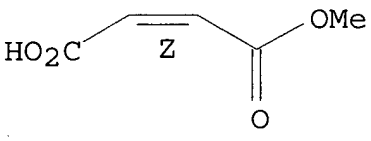


D1—OH

CM 2

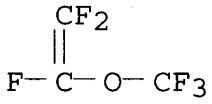
CRN 3052-50-4
CMF C5 H6 O4

Double bond geometry as shown.



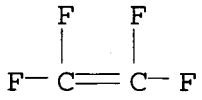
CM 3

CRN 1187-93-5
CMF C3 F6 O



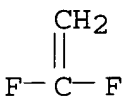
CM 4

CRN 116-14-3
CMF C2 F4



CM 5

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M004-62
ICS H01M010-40
CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST flexible fluoropolymer binder **battery** active material
IT **Battery** electrodes
Binders
Secondary **batteries**
(flexible and chem. stable fluoropolymer binders in electrode active materials for nonaq. **electrolyte** secondary **batteries**)
IT Fluoropolymers, uses
(flexible and chem. stable fluoropolymer binders in electrode active materials for nonaq. **electrolyte** secondary **batteries**)
IT 56357-87-0P, Tetrafluoroethylene-trifluoromethyl trifluorovinyl ether-vinylidene fluoride copolymer 74499-68-6P 355015-68-8P **355015-69-9P 355015-70-2P**
(flexible and chem. stable fluoropolymer binders in electrode active materials for nonaq. **electrolyte** secondary **batteries**)

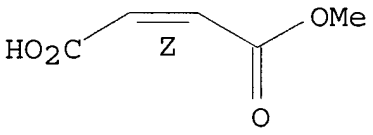
L46 ANSWER 3 OF 10 HCA COPYRIGHT 2003 ACS
133:153179 Polymer compositions for **electrolytes**, the **electrolytes**, and **batteries**. Kuzurao, Isao; Horie, Katsuo; Ichikawa, Yukio; Nagai, Aisaku (Kureha Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2000215917 A2 20000804, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-48721 19990120.
AB The polymers are reaction products of a copolymer, contg. .gtoreq.50% vinylidene fluoride and carboxyl and/or epoxy groups, and a vinyl compd., having .gtoreq.1 carboxyl and/or epoxy reactive groups. Polymer **electrolytes** have the polymer impregnated with a nonaq. **electrolyte** soln. Secondary Li **batteries** have the **electrolyte** between Li intercalating cathodes and anodes.
IT **286961-85-1 286961-86-2**
(compns. of polymer substrates for solid **electrolytes** in secondary lithium **batteries**)
RN 286961-85-1 HCA
CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with

1,1-difluoroethene, 1,1,2,3,3,3-hexafluoro-1-propene, oxiranylmethyl 2-methyl-2-propenoate and trifluoroethene (9CI) (CA INDEX NAME)

CM 1

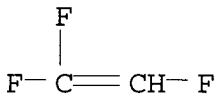
CRN 3052-50-4
CMF C5 H6 O4

Double bond geometry as shown.



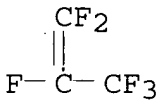
CM 2

CRN 359-11-5
CMF C2 H F3



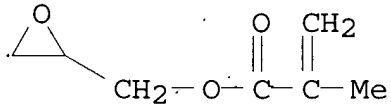
CM 3

CRN 116-15-4
CMF C3 F6



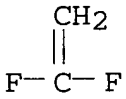
CM 4

CRN 106-91-2
CMF C7 H10 O3



CM 5

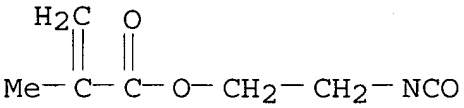
CRN 75-38-7
CMF C2 H2 F2



RN 286961-86-2 HCA
CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with 1,1-difluoroethene, 1,1,2,3,3,3-hexafluoro-1-propene, 2-isocyanatoethyl 2-methyl-2-propenoate and trifluoroethene (9CI) (CA INDEX NAME)

CM 1

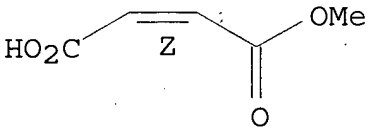
CRN 30674-80-7
CMF C7 H9 N O3



CM 2

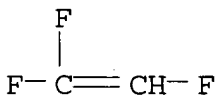
CRN 3052-50-4
CMF C5 H6 O4

Double bond geometry as shown.



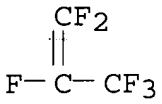
CM 3

CRN 359-11-5
CMF C2 H F3



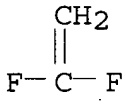
CM 4

CRN 116-15-4
CMF C3 F6



CM 5

CRN 75-38-7
CMF C2 H2 F2

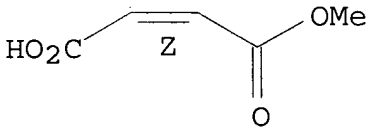


IT **286961-81-7P**
(prepolymers for polymer substrates for solid **electrolytes** in secondary lithium **batteries**)
RN 286961-81-7 HCA
CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with 1,1-difluoroethene, 1,1,2,3,3,3-hexafluoro-1-propene and trifluoroethene (9CI) (CA INDEX NAME)

CM 1

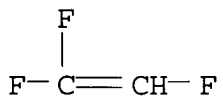
CRN 3052-50-4
CMF C5 H6 O4

Double bond geometry as shown.



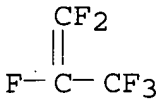
CM 2

CRN 359-11-5
CMF C2 H F3



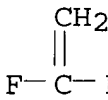
CM 3

CRN 116-15-4
CMF C3 F6



CM 4

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M010-40
ICS H01B001-06; H01G009-025; C08F214-22
CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary lithium **battery electrolyte** polymer substrate; vinylidene fluoride copolymer compn **battery electrolyte**
IT **Battery electrolytes**
(compns. of polymer substrates for **electrolytes** for secondary lithium **batteries**)
IT **286961-85-1 286961-86-2**
(compns. of polymer substrates for solid **electrolytes** in secondary lithium **batteries**)
IT 40528-67-4P, Hexafluoropropylene-trifluoroethylene-vinylidene fluoride copolymer 186773-67-1P **286961-81-7P** 286961-87-3P
(prepolymers for polymer substrates for solid **electrolytes** in secondary lithium **batteries**)

L46 ANSWER 4 OF 10 HCA COPYRIGHT 2003 ACS
130:268411 Thermoplastic elastomer-based gel-type polyelectrolyte. Tonomura, Tadashi (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 11080296 A2 19990326 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-246369 19970911.
AB Title gel-type polyelectrolyte with lithium ion cond. >1 ms/cm at room temp., good thermal, chem. and electrochem. stability, processibility, adhesion with powder particles of electrode materials and viscoelasticity comprises (A) thermoplastic elastomer of vinylidene fluoride-acrylonitrile block or graft copolymer, (B)

aprotonic org. solvent dissolved with lithium salt, optionally (C) elec. insulating inorg. substance powder. Thus, a gel-type polyelectrolyte sheet with thickness of 80 .mu.m was prepd. by dispersing of acrylonitrile-vinyl acetate-methacrylic acid-vinylidene fluoride block copolymer powder 2.5 g into LiPF6-dissolved solvent mixt. of ethylene carbonate (EC)-Et Me carbonate (EMC) (LiPF6: 1.5 mol/l, EC:EMC = 1:3) 23 g, heating at 149.degree. to give a transparent viscous mixt., followed by cooling the mixt. to 20.degree. to obtain a gel-type polyelectrolyte lump, then rolling the lump at 80.degree., showing elec. conductivities of 0.3 (-20.degree.), 3.5 (20.degree.), and 8 (80.degree.) ms/cm.

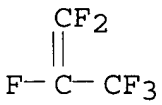
IT **222028-23-1P**, Acrylonitrile-hexafluoropropylene-methacrylic acid-styrene-vinylidene fluoride block copolymer
(elastomer; prepn. of fluorovinylidene-acrylonitrile elastomer-based gel-type polyelectrolyte)

RN 222028-23-1 HCA

CN 2-Propenoic acid, 2-methyl-, polymer with 1,1-difluoroethene, ethenylbenzene, 1,1,2,3,3,3-hexafluoro-1-propene and 2-propenenitrile, block (9CI) (CA INDEX NAME)

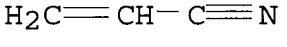
CM 1

CRN 116-15-4
CMF C3 F6



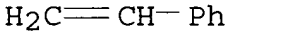
CM 2

CRN 107-13-1
CMF C3 H3 N



CM 3

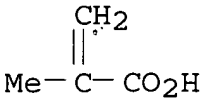
CRN 100-42-5
CMF C8 H8



CM 4

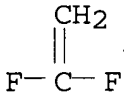
CRN 79-41-4

CMF C4 H6 O2



CM 5

CRN 75-38-7
CMF C2 H2 F2



IC ICM C08F293-00
ICS C08F290-00; C08K003-00; C08K003-18; C08L051-00; C08L053-00; H01M006-18; H01M006-22; H01M010-40
CC 39-9 (Synthetic Elastomers and Natural Rubber)
Section cross-reference(s): 35, 76
IT Electric conductivity
Electric conductors
Electrolytes
Gels
(prepn. and properties of fluorovinylidene-acrylonitrile elastomer-based gel-type polyelectrolyte)
IT 222028-16-2P, Acrylonitrile-methacrylic acid-vinyl acetate-vinylidene fluoride block copolymer 222028-18-4P, Acrylonitrile-hexafluoropropylene-styrene-vinyl acetate-vinylidene chloride block copolymer 222028-20-8P, Acrylonitrile-methacrylic acid-vinylidene fluoride block copolymer **222028-23-1P**, Acrylonitrile-hexafluoropropylene-methacrylic acid-styrene-vinylidene fluoride block copolymer
(elastomer; prepn. of fluorovinylidene-acrylonitrile elastomer-based gel-type polyelectrolyte)

L46 ANSWER 5 OF 10 HCA COPYRIGHT 2003 ACS
130:141631 Extrusion of polymer-based **electrochemical cell** components. Kronfli, Esam; Mattingley, Neville John (Aea Technology Plc, UK). PCT Int. Appl. WO 9905744 A1 19990204, 21 pp. DESIGNATED STATES: W: CA, GB, JP, KP, KR, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1998-GB2167 19980720. PRIORITY: GB 1997-15392 19970723.
AB A cell component comprising a polymer is prepd. by mixing a polymer consisting primarily of vinylidene fluoride with .gtoreq.1 other ingredient, such as an org. plasticizer, and extruding the mixt. at a temp. above the m.p. of the polymer. The method can be used to make **electrolyte** layers in which case the polymer is mixed

with at least a salt, and to make layers of composite material for use as anodes or cathodes, in which case the polymer is mixed with at least a particulate insertion material. No volatile solvents are required.

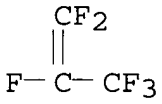
IT **162817-95-0D**, lithium complexes
(extrusion of **battery electrolytes** from mixt. of ethylene carbonate and propylene carbonate and)

RN 162817-95-0 HCA

CN 2-Propenoic acid, polymer with 1,1-difluoroethene and 1,1,2,3,3,3-hexafluoro-1-propene (9CI) (CA INDEX NAME)

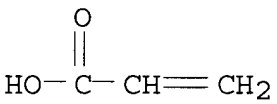
CM 1

CRN 116-15-4
CMF C3 F6



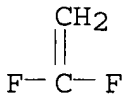
CM 2

CRN 79-10-7
CMF C3 H4 O2



CM 3

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M010-40
ICS H01M004-04

CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 76

ST polymer **battery** component extrusion; vinylidene fluoride polymer **battery** component extrusion

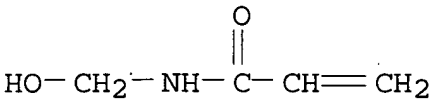
IT **Battery** anodes
Battery cathodes

Battery electrolytes
(extrusion of polymer-based)
IT **Electrochemical cells**
Secondary **batteries**
(extrusion of polymer-based components for)
IT Fluoropolymers, processes
(extrusion of polymer-based **electrochem. cell** components)
IT Fluoropolymers, processes
(lithium complexes; extrusion of **battery** components from polymer-based mixt. contg.)
IT Ionic conductivity
(of polymer-based mixts. for **battery electrolytes**)
IT 9011-17-0, Solef 21010
(extrusion of **battery** anodes from graphite and)
IT 24937-79-9D, PVDF, lithium complexes
(extrusion of **battery** components from polymer-based mixt. contg.)
IT 7439-93-2D, Lithium, PVDF complexes, processes **162817-95-0D**, lithium complexes
(extrusion of **battery electrolytes** from mixt. of ethylene carbonate and propylene carbonate and)
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
(extrusion of **battery electrolytes** from polymer-based mixt. contg.)

L46 ANSWER 6 OF 10 HCA COPYRIGHT 2003 ACS
130:40968 Polymeric binders for nonaqueous **battery** electrodes. Noritake, Masayoshi; Ito, Nobuyuki (JSR Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 10302799 A2 19981113 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-121444 19970425.
AB The binders are aq. dispersions contg. vinylidene fluoride polymers having functional groups. Use of the binders give **batteries** with high performance and storage stability.
IT **216673-45-9P 216673-56-2P 216673-66-4P**
(vinylidene fluoride polymers as binders for nonaq. **battery** electrodes)
RN 216673-45-9 HCA
CN Butanedioic acid, methylene-, polymer with butyl 2-propenoate, 1,1-difluoroethene, 1,1,2,3,3,3-hexafluoro-1-propene, N-(hydroxymethyl)-2-propenamide, methyl 2-methyl-2-propenoate and 2-propenoic acid, graft (9CI) (CA INDEX NAME)

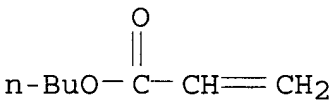
CM 1

CRN 924-42-5
CMF C4 H7 N O2



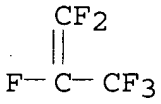
CM 2

CRN 141-32-2
CMF C7 H12 O2



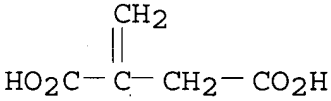
CM 3

CRN 116-15-4
CMF C3 F6



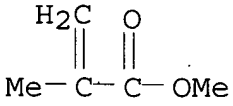
CM 4

CRN 97-65-4
CMF C5 H6 O4



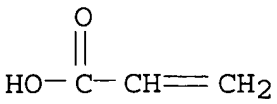
CM 5

CRN 80-62-6
CMF C5 H8 O2



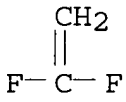
CM 6

CRN 79-10-7
CMF C3 H4 O2



CM 7

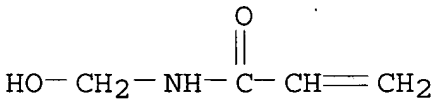
CRN 75-38-7
CMF C2 H2 F2



RN 216673-56-2 HCA
CN 2-Propenoic acid, polymer with butyl 2-propenoate, 1,1-difluoroethene, ethenylbenzene, 1,1,2,3,3,3-hexafluoro-1-propene and N-(hydroxymethyl)-2-propenamide, graft (9CI) (CA INDEX NAME)

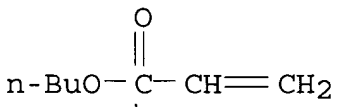
CM 1

CRN 924-42-5
CMF C4 H7 N O2



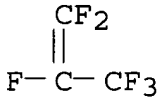
CM 2

CRN 141-32-2
CMF C7 H12 O2



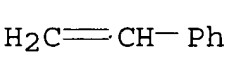
CM 3

CRN 116-15-4
CMF C3 F6



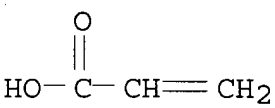
CM 4

CRN 100-42-5
CMF C8 H8



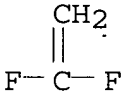
CM 5

CRN 79-10-7
CMF C3 H4 O2



CM 6

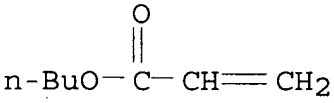
CRN 75-38-7
CMF C2 H2 F2



RN 216673-66-4 HCA
CN Butanedioic acid, methylene-, polymer with butyl 2-propenoate, 1,1-difluoroethene, 1,1,2,3,3,3-hexafluoro-1-propene, methyl 2-methyl-2-propenoate, oxiranylmethyl 2-methyl-2-propenoate and 2-propenoic acid, graft (9CI) (CA INDEX NAME)

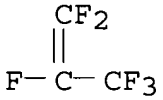
CM 1

CRN 141-32-2
CMF C7 H12 O2



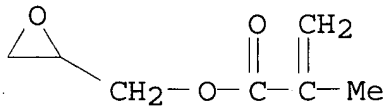
CM 2

CRN 116-15-4
CMF C3 F6



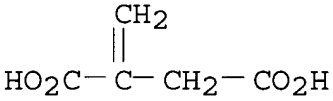
CM 3

CRN 106-91-2
CMF C7 H10 O3



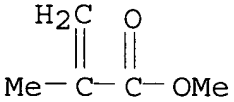
CM 4

CRN 97-65-4
CMF C5 H6 O4



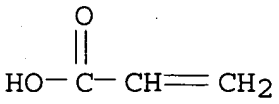
CM 5

CRN 80-62-6
CMF C5 H8 O2



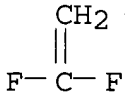
CM 6

CRN 79-10-7
CMF C3 H4 O2



CM 7

CRN 75-38-7
CMF C2 H2 F2

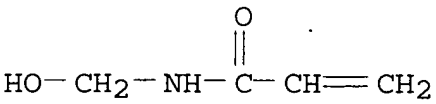


IC ICM H01M004-62
ICS C08L027-16
CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 35
ST vinylidene fluoride polymer binder **battery** electrode; nonaq **battery** electrode binder vinylidene polymer
IT **Battery** electrodes
Binders
(vinylidene fluoride polymers as binders for nonaq. **battery** electrodes)
IT **216673-45-9P 216673-56-2P 216673-66-4P**
(vinylidene fluoride polymers as binders for nonaq. **battery** electrodes)

L46 ANSWER 7 OF 10 HCA COPYRIGHT 2003 ACS
129:262851 Binder for hydrogen-absorbing alloy anodes for secondary **batteries**. Ito, Nobuyuki; Yasuda, Naoshi; Noritake, Yasuyoshi; Takeuchi, Tasumasa (JSR Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 10241692 A2 19980911 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-58502 19970226.
AB The binder is an aq. dispersion of a copolymer which has a functional group, glass transition point .ltoreq.5.degree., and toluene-insol. component 20-100 wt.%. The binder shows high adhesion with current collectors and does not affect discharge capacity after charge-discharge cycling and is free from ignition.
IT **213676-17-6P**
(binder; binder for H-absorbing alloy anodes for secondary **batteries**)
RN 213676-17-6 HCA
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with butyl 2-propenoate, 1,1-difluoroethene, ethenylbenzene, 1,1,2,3,3,3-hexafluoro-1-propene, N-(hydroxymethyl)-2-propenamide and 2-propenoic acid (9CI) (CA INDEX NAME)

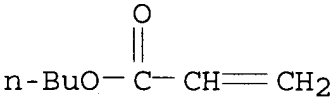
CM 1

CRN 924-42-5
CMF C4 H7 N O2



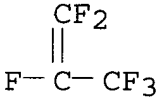
CM 2

CRN 141-32-2
CMF C7 H12 O2



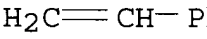
CM 3

CRN 116-15-4
CMF C3 F6



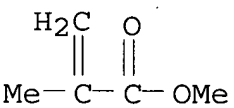
CM 4

CRN 100-42-5
CMF C8 H8



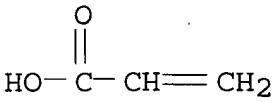
CM 5

CRN 80-62-6
CMF C5 H8 O2



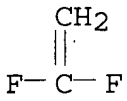
CM 6

CRN 79-10-7
CMF C3 H4 O2



CM 7

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M004-62
ICS H01M004-24
CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **battery** hydrogen absorbing alloy anode binder; fluoropolymer acrylic binder **battery** anode; polysiloxane acrylic binder **battery** anode
IT **Battery** anodes
(H-absorbing alloy; binder for H-absorbing alloy anodes for secondary **batteries**)
IT Fluoropolymers, uses
(acrylic, binder; binder for H-absorbing alloy anodes for secondary **batteries**)
IT Polysiloxanes, uses
(acrylic, graft, binder; binder for H-absorbing alloy anodes for secondary **batteries**)
IT Binders
(binder for H-absorbing alloy anodes for secondary **batteries**)
IT 1333-74-0, Hydrogen, uses
(alloys contg. absorbed, anodes; binder for H-absorbing alloy anodes for secondary **batteries**)
IT 213676-19-8P 213676-21-2P
(binder; binder for H-absorbing alloy anodes for secondary **batteries**)
IT 213676-15-4P **213676-17-6P**
(binder; binder for H-absorbing alloy anodes for secondary **batteries**)

L46 ANSWER 8 OF 10 HCA COPYRIGHT 2003 ACS
129:191508 Secondary lithium **batteries** with cathodes using fluoropolymer binders. Akabane, Naoto; Kitagawa, Akira (Hitachi Maxell, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 10233216 A2 19980902 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-51060 19970218.

AB The **batteries** use cathodes having an active mass-binder mixt. applied on a conductive substrate, where the binder contains polytetrafluoroethylene and a vinylidene fluoride based copolymer contg. fluoro monomers and unsatd. dihydric acid monoester monomers.

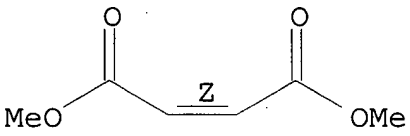
IT **200424-67-5**
(fluoropolymer binder mixts. for cathodes in secondary lithium **batteries**)

RN 200424-67-5 HCA
CN 2-Butenedioic acid (2Z)-, dimethyl ester, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

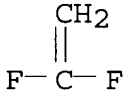
CRN 624-48-6
CMF C6 H8 O4

Double bond geometry as shown.



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M004-62
ICS H01M004-02; H01M010-40

CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium **battery** cathode fluoropolymer binder mixt; polytetrafluoroethylene binder mixt lithium **battery** cathode; vinylidene fluoride copolymer lithium **battery** cathode; unsatd ester copolymer **battery** cathode

IT **Battery** cathodes
Binders
(fluoropolymer binder mixts. for cathodes in secondary lithium

batteries)

IT Fluoropolymers, uses
(fluoropolymer binder mixts. for cathodes in secondary lithium **batteries**)

IT 9002-84-0, Polytetrafluoroethylene 39300-70-4, Lithium nickel oxide **200424-67-5**
(fluoropolymer binder mixts. for cathodes in secondary lithium **batteries**)

L46 ANSWER 9 OF 10 HCA COPYRIGHT 2003 ACS

129:43339 Binders for secondary nonaqueous **electrolyte batteries** and **battery** electrode active mass mixtures using the binders. Shimizu, Tetsuo; Higashihata, Yoshihide; Nakamura, Takayuki; Ino, Tadashi; Ichikawa, Kenji (Daikin Industries, Ltd., Japan; Shimizu, Tetsuo; Higashihata, Yoshihide; Nakamura, Takayuki; Ino, Tadashi; Ichikawa, Kenji). PCT Int. Appl. WO 9827605 A1 19980625, 32 pp. DESIGNATED STATES: W: AU, CN, ID, KR, RU, SG, US; RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (Japanese). CODEN: PIXXD2. APPLICATION: WO 1997-JP3576 19971006. PRIORITY: JP 1996-335872 19961216.

AB The binders are copolymers contg. 50-80 mol% vinylidene fluoride and 20-50 mol% C2F4, or vinylidene fluoride 50-80, C2F4 17-50, and other copolymerizable monomer <3 mol%. The binders do not swell in **battery electrolyte**, and render **batteries** long cycle life. The cathodes are preferably Li contg oxides.

IT **208391-84-8**
(nonswelling vinylidene-tetrafluoroethylene copolymer binders for electrodes in secondary lithium **batteries**)

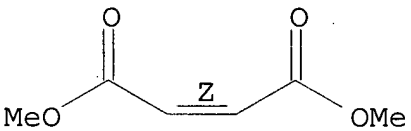
RN 208391-84-8 HCA

CN 2-Butenedioic acid (2Z)-, dimethyl ester, polymer with 1,1-difluoroethene and tetrafluoroethene (9CI) (CA INDEX NAME)

CM 1

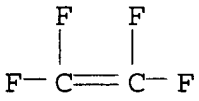
CRN 624-48-6
CMF C6 H8 O4

Double bond geometry as shown.



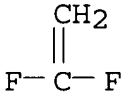
CM 2

CRN 116-14-3
CMF C2 F4



CM 3

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M004-62
ICS H01M004-02; H01M010-40
CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
ST **battery** electrode binder vinylidene fluoride copolymer; electrode binder vinylidene fluoride tetrafluoroethylene copolymer; lithium **battery** electrode nonswelling binder
IT Secondary **batteries**
(lithium; nonswelling vinylidene-tetrafluoroethylene copolymer binders for electrodes in secondary lithium **batteries**)
IT Carbon black, uses
(nonswelling vinylidene-tetrafluoroethylene copolymer binders for carbonaceous anodes in secondary lithium **batteries**)
IT Binders
(nonswelling vinylidene-tetrafluoroethylene copolymer binders for electrodes in secondary lithium **batteries**)
IT Fluoropolymers, uses
(nonswelling vinylidene-tetrafluoroethylene copolymer binders for electrodes in secondary lithium **batteries**)
IT 25190-89-0 25684-76-8, Tetrafluoroethylene-vinylidene fluoride copolymer 74499-68-6 **208391-84-8**
(nonswelling vinylidene-tetrafluoroethylene copolymer binders for electrodes in secondary lithium **batteries**)
IT 12190-79-3, Cobalt lithium oxide (CoLiO2)
(nonswelling vinylidene-tetrafluoroethylene copolymer binders for lithium cobaltate cathodes in secondary lithium **batteries**)

L46 ANSWER 10 OF 10 HCA COPYRIGHT 2003 ACS
128:63958 Electrode binders, electrode active mixtures, and electrode structures for nonaqueous **electrolyte batteries** and the **batteries**. Kajio, Hidetora; Horie, Katsuo; Nagai, Aisaku; Katsao, Takumi (Kureha Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 09320607 A2 19971212 Heisei, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1996-152944 19960527.

AB The binders contain 5-75% vinylidene fluoride based polymer having intrinsic viscosity .gtoreq.1.2 dL/g and remaining carboxy or epoxy group contg. vinylidene fluoride polymer. The electrode active mixts. contain powd. electrode active mass dispersed in the binder. The electrodes have the electrode active mixt. applied at least on 1 side of a current collecting substrate. The **batteries** use cathodes and/or anodes having the above structure.

IT **200424-67-5P**
(vinylidene fluoride based polymer binder mixts. for nonaq. **electrolyte battery** electrodes)

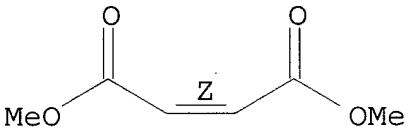
RN 200424-67-5 HCA

CN 2-Butenedioic acid (2Z)-, dimethyl ester, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

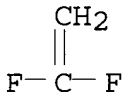
CRN 624-48-6
CMF C6 H8 O4

Double bond geometry as shown.



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M004-62
ICS C08L027-16

CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery** electrode binder vinylidene fluoride polymer

IT **Battery** anodes
(vinylidene fluoride based polymer binder mixts. for carbonaceous anodes in nonaq. **electrolyte batteries**)

IT Carbonaceous materials (technological products)
(vinylidene fluoride based polymer binder mixts. for carbonaceous anodes in nonaq. **electrolyte batteries**)

IT Binders
(vinylidene fluoride based polymer binder mixts. for nonaq. **electrolyte battery** electrodes)

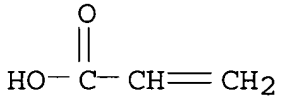
IT Fluoropolymers, uses
(vinylidene fluoride based polymer binder mixts. for nonaq. **electrolyte battery** electrodes)
IT 24937-79-9P, Poly(vinylidene fluoride) 186773-65-9P, Allyl glycidyl ether-vinylidene fluoride copolymer **200424-67-5P**
(vinylidene fluoride based polymer binder mixts. for nonaq. **electrolyte battery** electrodes)

=> d l47 1-14 cbib abs hitstr hitind

L47 ANSWER 1 OF 14 HCA COPYRIGHT 2003 ACS
137:281916 Secondary lithium ion polymer **battery** and manufacture of binder used as tightly bonding layer in the **battery**. Tokai, Yusuke; Mizuguchi, Akio; Higami, Akihiro; Chang, Sho Wu; Kobayashi, Tadashi; Takeuchi, Sawako (Mitsubishi Materials Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2002304997 A2 20021018, 15 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-303053 20010928. PRIORITY: JP 2001-25688 20010201.
AB In the **battery** comprising an **electrolyte** sandwiched between a cathode and an anode, the cathode comprises a cathode collector laminated with a cathode active material layer contg. a binder A via a tightly bonding layer contg. a binder C and elec. conductors, and the anode comprises an anode collector laminated with an anode active material layer contg. a binder B via a tightly bonding layer contg. a binder C and elec. conductors, in which the binder C is a polymer obtained by modification of binder A or binder B. The binder C is manufd. by modification of binder A or binder B. The **battery** shows high interlayer adhesion between active material and collector layers to increase elec. cond., cycle life, and corrosion resistance.
IT **109955-89-7P**, Acrylic acid-vinylidene fluoride graft copolymer **110866-45-0P**, Methyl methacrylate-vinylidene fluoride graft copolymer **113253-83-1P 132789-82-3P**, Methyl acrylate-vinylidene fluoride graft copolymer
(binder; manuf. of binder used as tightly bonding layer in secondary lithium ion polymer **battery**)
RN 109955-89-7 HCA
CN 2-Propenoic acid, polymer with 1,1-difluoroethene, graft (9CI) (CA INDEX NAME)

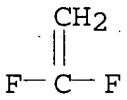
CM 1

CRN 79-10-7
CMF C3 H4 O2



CM 2

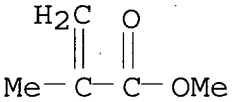
CRN 75-38-7
CMF C2 H2 F2



RN 110866-45-0 HCA
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1,1-difluoroethene, graft (9CI) (CA INDEX NAME)

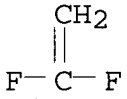
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

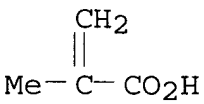
CRN 75-38-7
CMF C2 H2 F2



RN 113253-83-1 HCA
CN 2-Propenoic acid, 2-methyl-, polymer with 1,1-difluoroethene, graft (9CI) (CA INDEX NAME)

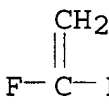
CM 1

CRN 79-41-4
CMF C4 H6 O2



CM 2

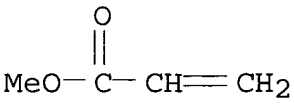
CRN 75-38-7
CMF C2 H2 F2



RN 132789-82-3 HCA
CN 2-Propenoic acid, methyl ester, polymer with 1,1-difluoroethene, graft (9CI) (CA INDEX NAME)

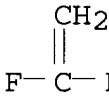
CM 1

CRN 96-33-3
CMF C4 H6 O2



CM 2

CRN 75-38-7
CMF C2 H2 F2



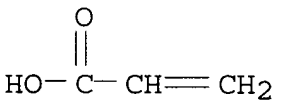
IC ICM H01M004-62
ICS C08F259-08; C09J127-12; C09J127-16; C09J127-18; C09J127-20; C09J127-22; C09J151-00; C09J201-00; H01M004-02; H01M004-66; H01M010-40
CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST lithium ion polymer **battery** binder; radiation grafting polymer binder lithium ion **battery**; cycle life lithium **battery** graft polymer binder
IT Fluoropolymers, uses
(acrylic, graft, binder; manuf. of binder used as tightly bonding layer in secondary lithium ion polymer **battery**)
IT Polymerization
(graft, radiochem.; manuf. of binder used as tightly bonding layer in secondary lithium ion polymer **battery**)
IT Secondary **batteries**
(lithium; manuf. of binder used as tightly bonding layer in secondary lithium ion polymer **battery**)

IT Binders
(manuf. of binder used as tightly bonding layer in secondary lithium ion polymer **battery**)
IT **109955-89-7P**, Acrylic acid-vinylidene fluoride graft copolymer **110866-45-0P**, Methyl methacrylate-vinylidene fluoride graft copolymer **113253-83-1P 132789-82-3P**, Methyl acrylate-vinylidene fluoride graft copolymer
(binder; manuf. of binder used as tightly bonding layer in secondary lithium ion polymer **battery**)

L47 ANSWER 2 OF 14 HCA COPYRIGHT 2003 ACS
135:259678 Use of grafted PVdF-based polymers in lithium **batteries**. Jarvis, C. R.; Macklin, W. J.; Macklin, A. J.; Mattingley, N. J.; Kronfli, E. (E1 Culham, Culham Science Centre, AEA Technology Batteries, Abingdon, Oxfordshire, OX14 3ED, UK). Journal of Power Sources, 97-98, 664-666 (English) 2001. CODEN: JPSODZ. ISSN: 0378-7753. Publisher: Elsevier Science S.A..
AB Modifications to the properties of PVdF have been achieved by grafting. Selection of the appropriate monomer has led to an improvement in the adhesion of composite electrodes to current collectors, increased **electrolyte** solvent uptake and increased the range of solvents for homopolymer PVdF at room temp. Graphite - LiCoO2 cells contg. such modified PVdF-based polymers have demonstrated good rate performance and stable cycle life.
IT **109955-89-7**, Acrylic acid-vinylidene fluoride graft copolymer
(grafted polyvinylidenedifluoride-based polymers in lithium **batteries**)
RN 109955-89-7 HCA
CN 2-Propenoic acid, polymer with 1,1-difluoroethene, graft (9CI) (CA INDEX NAME)

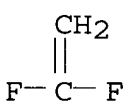
CM 1

CRN 79-10-7
CMF C3 H4 O2



CM 2

CRN 75-38-7
CMF C2 H2 F2

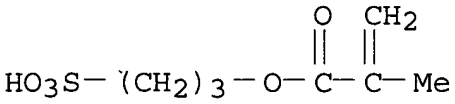


CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, **72**
ST grafted polyvinylidenedifluoride electrode binder lithium **battery**
IT **Battery** anodes
(grafted polyvinylidenedifluoride-based polymers in lithium **batteries**)
IT Secondary **batteries**
(lithium; grafted polyvinylidenedifluoride-based polymers in lithium **batteries**)
IT 7782-42-5, Graphite, uses 12190-79-3, cobalt lithium oxide colio2 **109955-89-7**, Acrylic acid-vinylidene fluoride graft copolymer 120543-88-6
(grafted polyvinylidenedifluoride-based polymers in lithium **batteries**)

L47 ANSWER 3 OF 14 HCA COPYRIGHT 2003 ACS
135:181479 fluoropolymer composition containing ionic or ionizable groups and their manufacture. Hedhli, Lofti; Billon, Laurent (Atofina Chemicals, Inc., USA). PCT Int. Appl. WO 2001060872 A1 20010823, 21 pp. DESIGNATED STATES: W: CA, CN, IL, IN, JP, KR, MX, RU; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-US4995 20010215. PRIORITY: US 2000-PV182732 20000215; US 2001-774266 20010130.
AB The compn. is manufd. by blending .gtoreq.1 acrylic resin or vinyl resin having .gtoreq.1 ionic or ionizable group and .gtoreq.1 thermoplastic fluoropolymer, or polymg. .gtoreq.1 acrylic and/or vinyl monomer having .gtoreq.1 ionic or ionizable group in .gtoreq.1 fluoropolymer. The fluoropolymer compns. are useful in a variety of applications such as polyelectrolyte membranes in **batteries** and fuel cells having good chem. resistance and/or high mech. strength.
IT **355418-86-9P 355418-87-0P 355418-88-1P 355418-89-2P 355418-90-5P**
(fluoropolymer compn. contg. ionic or ionizable groups for polyelectrolyte membranes)
RN 355418-86-9 HCA
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with butyl 2-propenoate, 1,1-difluoroethene and 3-sulfopropyl 2-methyl-2-propenoate, graft (9CI) (CA INDEX NAME)

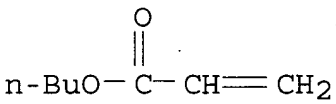
CM 1

CRN 7582-21-0
CMF C7 H12 O5 S



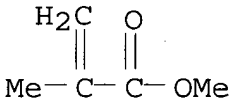
CM 2

CRN 141-32-2
CMF C7 H12 O2



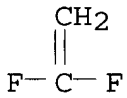
CM 3

CRN 80-62-6
CMF C5 H8 O2



CM 4

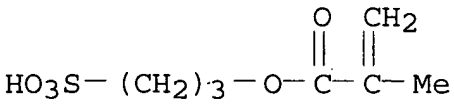
CRN 75-38-7
CMF C2 H2 F2



RN 355418-87-0 HCA
CN 2-Propenoic acid, 2-methyl-, oxydi-2,1-ethanediyl ester, polymer with butyl 2-propenoate, 1,1-difluoroethene, methyl 2-methyl-2-propenoate and 3-sulfopropyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

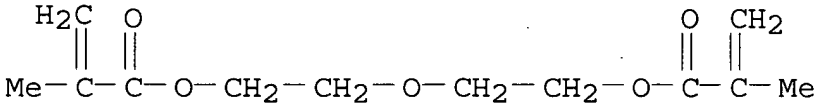
CM 1

CRN 7582-21-0
CMF C7 H12 O5 S



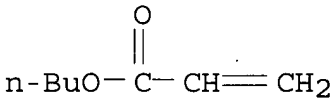
CM 2

CRN 2358-84-1
CMF C12 H18 O5



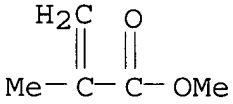
CM 3

CRN 141-32-2
CMF C7 H12 O2



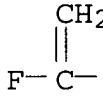
CM 4

CRN 80-62-6
CMF C5 H8 O2



CM 5

CRN 75-38-7
CMF C2 H2 F2

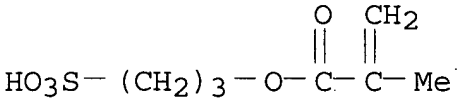


RN 355418-88-1 HCA

CN 2-Propenoic acid, 2-methyl-, oxydi-2,1-ethanediyl ester, polymer with butyl 2-propenoate, 1,1-difluoroethene, methyl 2-methyl-2-propenoate, 2-propenamide and 3-sulfopropyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

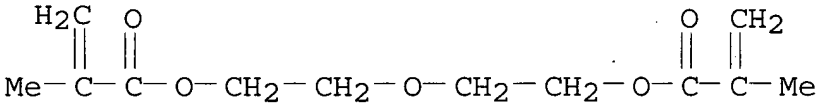
CM 1

CRN 7582-21-0
CMF C7 H12 O5 S



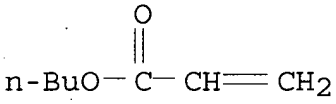
CM 2

CRN 2358-84-1
CMF C12 H18 O5



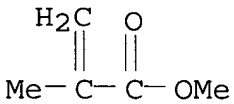
CM 3

CRN 141-32-2
CMF C7 H12 O2



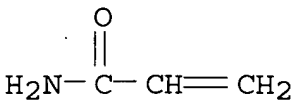
CM 4

CRN 80-62-6
CMF C5 H8 O2



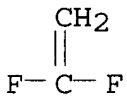
CM 5

CRN 79-06-1
CMF C3 H5 N O



CM 6

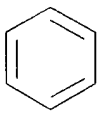
CRN 75-38-7
CMF C2 H2 F2

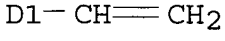


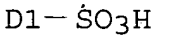
RN 355418-89-2 HCA
CN 2-Propenoic acid, 2-methyl-, oxydi-2,1-ethanediyl ester, polymer with butyl 2-propenoate, 1,1-difluoroethene, ethenylbenzenesulfonic acid and methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 26914-43-2
CMF C8 H8 O3 S
CCI IDS

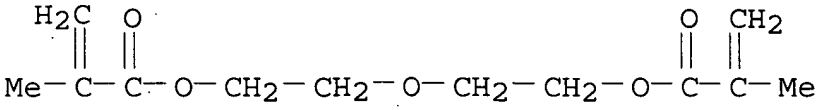






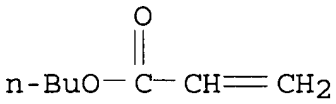
CM 2

CRN 2358-84-1
CMF C12 H18 O5



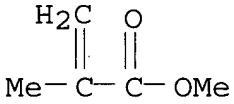
CM 3

CRN 141-32-2
CMF C7 H12 O2



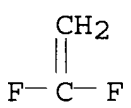
CM 4

CRN 80-62-6
CMF C5 H8 O2



CM 5

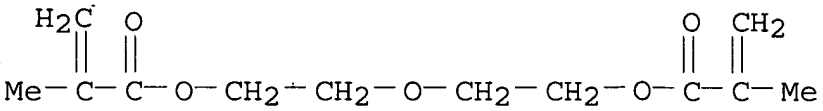
CRN 75-38-7
CMF C2 H2 F2



RN 355418-90-5 HCA
CN 2-Propenoic acid, 2-methyl-, oxydi-2,1-ethanediyl ester, polymer with butyl 2-propenoate, 1,1-difluoroethene, ethenesulfonic acid and methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 2358-84-1
CMF C12 H18 O5

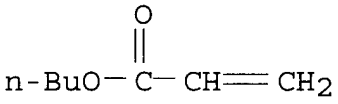


CM 2

CRN 1184-84-5
CMF C2 H4 O3 S

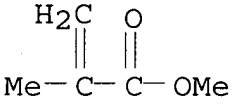
CM 3

CRN 141-32-2
CMF C7 H12 O2



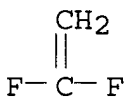
CM 4

CRN 80-62-6
CMF C5 H8 O2



CM 5

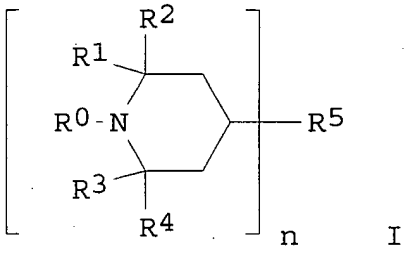
CRN 75-38-7
CMF C2 H2 F2



IC ICM C08F008-00
ICS C08G063-48; C08G063-91; C08L023-00; C08L023-04; C08L027-12;
C08L033-02; C08L033-06; H01M002-00; H01M002-02; H01M002-16;

H01M004-86; H01M004-90; H01M004-96
CC 37-6 (Plastics Manufacture and Processing)
Section cross-reference(s): 38, 76
IT Fuel cells
Ion exchange membranes
Membrane electrodes
Primary **batteries**
(fluoropolymer compn. contg. ionic or ionizable groups for polyelectrolyte membranes)
IT **Electrolytic cells**
(membrane; fluoropolymer compn. contg. ionic or ionizable groups for polyelectrolyte membranes)
IT **355418-86-9P 355418-87-0P 355418-88-1P**
355418-89-2P 355418-90-5P
(fluoropolymer compn. contg. ionic or ionizable groups for polyelectrolyte membranes)

L47 ANSWER 4 OF 14 HCA COPYRIGHT 2003 ACS
135:125019 Secondary nonaqueous **electrolyte batteries**. Yamada, Manabu; Kubota, Naohiro (Denso Co., Ltd., Japan; Asahi Denka Kogyo K. K.). Jpn. Kokai Tokkyo Koho JP 2001210314 A2 20010803, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-22246 20000131.
GI



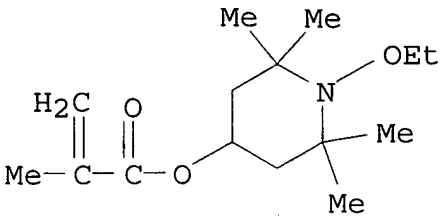
I

AB The **batteries** use cathodes, anodes, and/or separators contg. a piperidine deriv. I, where R0 = O free radical, HO, alkoxy, or polymer group connected by ether group; R1-4 = C1-4 alkyl groups, R5 = H, HO, or an n valent org. group, n = integer 1-100.
IT **351182-52-0**
(secondary lithium **batteries** contg. piperidine deriv. additives in electrodes and/or separators)
RN 351182-52-0 HCA
CN 2-Propenoic acid, 2-methyl-, 1-ethoxy-2,2,6,6-tetramethyl-4-piperidinyl ester, polymer with 1,1-difluoroethene and methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

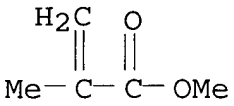
CRN 351182-51-9

CMF C15 H27 N O3



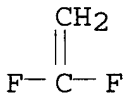
CM 2

CRN 80-62-6
CMF C5 H8 O2



CM 3

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M004-02
ICS H01M004-62; H01M010-40
CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary nonaq **electrolyte battery** piperidine deriv additive; electrode secondary **battery** piperidine deriv additive; separator secondary **battery** piperidine deriv additive
IT Secondary **batteries**
(lithium; secondary lithium **batteries** contg. piperidine deriv. additives in electrodes and/or separators)
IT 7440-44-0, Carbon, uses
(anodes contg. piperidine deriv. additives for secondary lithium **batteries**)
IT 12031-65-1, Lithium nickel oxide (LiNiO2)
(cathodes contg. piperidine deriv. additives for secondary lithium **batteries**)
IT 2226-96-2D, reaction products with EPDM rubber 2516-92-9
6599-87-7D, reaction products with EPDM rubber 66569-11-7

68393-07-7 122586-52-1 122586-96-3 **351182-52-0**
351182-53-1 351182-54-2
(secondary lithium **batteries** contg. piperidine deriv. additives in electrodes and/or separators)
IT 9002-88-4, Polyethylene
(separators contg. piperidine deriv. additives for secondary lithium **batteries**)

L47 ANSWER 5 OF 14 HCA COPYRIGHT 2003 ACS
135:26880 Porous pattern forming material, method for pattern formation using same, and method for manufacture of **electrolysis cells**, filters, porous carbon materials, capacitor, and catalyst layer of fuel **batteries** using same. Hiraoka, Toshiro; Asakawa, Koji; Akasaka, Yoshihiro; Hotta, Yasuyuki (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2001151834 A2 20010605, 62 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-169263 20000606. PRIORITY: JP 1999-159479 19990607; JP 1999-262326 19990916.
AB The title material contains a block copolymer or a graft copolymer for forming pattern of a microphase sepn. structure, wherein the .gtoreq.2 kinds of the polymer chains of the block copolymer or the graft copolymer has .gtoreq.1.4 of the monomer based N/(Nc-No) where N is total element no. in the monomer, Nc is the no. of carbon in the monomer, and No is the no. of oxygen in the monomer. The method provides the 2- and 3-dimensional pattern in nanometer size with the simple process.
IT **343253-68-9P**
(copolymer for porous pattern forming material)
RN 343253-68-9 HCA
IC ICM C08F297-02
ICS C08F299-00; C08G081-02; C08G083-00; C08J009-26; H01L021-3065; H01M002-16; H01M004-88; H01M004-96; C01B031-02; C04B035-52; H01M004-58; H01M010-40; C08L101-00
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 35, **52**, 76
IT Photolithography
(porous pattern forming material, method for pattern formation using same, and method for manuf. of **electrolysis cells**, filters, porous carbon materials, capacitor, and catalyst layer of fuel **batteries** using same)
IT 25014-10-2P, Isoprene-methyl methacrylate copolymer 25014-15-7P, 2-Vinylpyridine homopolymer 25014-41-9P, Acrylonitrile homopolymer 26353-79-7P, Acrylonitrile-propylene oxide copolymer 32197-39-0P, 3,3',4,4'-Biphenyltetracarboxylic acid dianhydride-1,4-phenylenediamine copolymer,sru 106911-77-7P, Styrene-methyl methacrylate block copolymer 108614-86-4P, Styrene-2-vinylpyridine block copolymer 108689-93-6P, Ethylene oxide-acrylonitrile block copolymer 109584-39-6P, Ethylene oxide-styrene graft copolymer 120964-16-1P, Acrylic acid-methyl methacrylate block copolymer 127381-17-3P, Ethylene oxide-hexamethylcyclotrisiloxane block copolymer 339315-59-2P, 1,2-Butadiene-ethylene oxide block

copolymer 343253-67-8P **343253-68-9P** 343253-69-0P
343253-70-3P 343253-71-4P 343253-72-5P 343253-73-6P
343253-74-7P 343253-76-9P 343253-77-0P 343253-78-1P
343253-79-2P
(copolymer for porous pattern forming material)

L47 ANSWER 6 OF 14 HCA COPYRIGHT 2003 ACS
133:240613 Secondary nonaqueous **electrolyte batteries**
. koishi, Toshio; Minegishi, Seiichi (Central Glass Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2000251897 A2 20000914, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-48204 19990225.

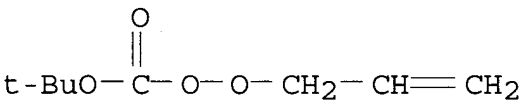
AB The **batteries** use electrodes having a binder mixt. contg. a vinylidene fluoride-C2ClF3-unsatd. peroxide copolymer, or olefin grafted copolymer formed by breaking up the peroxide site, and an isocyanate or amino resin.

IT **292182-19-5**
(compns. of polymer binder mixts. for secondary lithium **batteries**)

RN 292182-19-5 HCA
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with chlorotrifluoroethene, 1,1-difluoroethene and O-(1,1-dimethylethyl) OO-2-propenyl carbonoperoxoate, graft (9CI) (CA INDEX NAME)

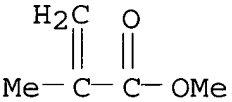
CM 1

CRN 121537-65-3
CMF C8 H14 O4



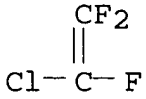
CM 2

CRN 80-62-6
CMF C5 H8 O2



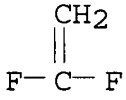
CM 3

CRN 79-38-9
CMF C2 Cl F3



CM 4

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M004-62
ICS H01M004-02; H01M010-40
CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary nonaq **battery** electrode polymer binder compn; vinylidene fluoride copolymer binder mixt **battery** electrode; chlorotrifluoroethene copolymer binder mixt **battery** electrode; unsatd peroxide copolymer binder mixt **battery** electrode; isocyanate polymer binder mixt **battery** electrode; amino resin polymer binder mixt **battery** electrode
IT **Battery** electrodes
(compns. of polymer binder mixts. for secondary lithium **batteries**)
IT Aminoplasts
Fluoropolymers, uses
(compns. of polymer binder mixts. for secondary lithium **batteries**)
IT 9003-08-1, Nikalac mx 40 24937-79-9, Solef 1010 86752-86-5, Desmodur Z 4370 109190-12-7, Coronate 2507 110872-66-7, tert-Butyl peroxyallyl carbonate-chlorotrifluoroethylene-vinylidene fluoride graft copolymer 144245-98-7, Coronate HX **292182-19-5**
(compns. of polymer binder mixts. for secondary lithium **batteries**)

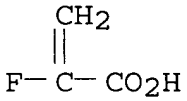
L47 ANSWER 7 OF 14 HCA COPYRIGHT 2003 ACS
133:180339 Polymer **electrolyte** lithium **batteries**.
Utagawa, Reiko (Japan). Jpn. Kokai Tokkyo Koho JP 2000228218 A2 20000815, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-65380 19990204.
AB The **batteries** use a polymer **electrolyte** contg. a copolymer of vinylidene fluoride with Li .alpha.-fluoroacrylate or Li trifluoromethacrylate and an org. solvent.
IT **288569-86-8 288569-87-9**

(lithium fluoro(meth)acrylate-vinylidene fluoride copolymer based **electrolytes** for lithium **batteries**)

RN 288569-86-8 HCA
CN 2-Propenoic acid, 2-fluoro-, lithium salt, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

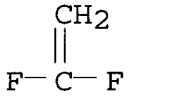
CM 1

CRN 288569-85-7
CMF C3 H3 F O2 . Li



CM 2

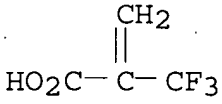
CRN 75-38-7
CMF C2 H2 F2



RN 288569-87-9 HCA
CN 2-Propenoic acid, 2-(trifluoromethyl)-, lithium salt, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

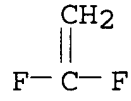
CM 1

CRN 208849-71-2
CMF C4 H3 F3 O2 . Li



CM 2

CRN 75-38-7
CMF C2 H2 F2

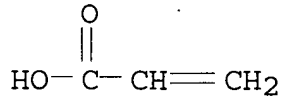


IC ICM H01M010-40
ICS C08L027-16
CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
ST **battery electrolyte** vinylidene fluoride lithium fluoroacrylate copolymer
IT **Battery electrolytes**
(lithium fluoro(meth)acrylate-vinylidene fluoride copolymer based **electrolytes** for lithium **batteries**)
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 21324-40-3, Lithium hexafluorophosphate **288569-86-8** **288569-87-9**
(lithium fluoro(meth)acrylate-vinylidene fluoride copolymer based **electrolytes** for lithium **batteries**)

L47 ANSWER 8 OF 14 HCA COPYRIGHT 2003 ACS
132:168810 Laminar **batteries**. Kaido, Hideki (Toshiba Battery Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2000067867 A2 20000303, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-236868 19980824.
AB The **batteries** use cathodes and/or anodes contg. an active mass, a nonaq. **electrolyte** soln, and a copolymer of a F contg. monomer and a 2nd monomer (I) of formula: -(CH2CR(COOX))n- on a collector; in which R and X are H or hydrocarbyl groups, and the mol. rato of I to the F contg. monomer is .ltoreq.0.2.
IT **61778-05-0**, Acrylic acid-vinylidene fluoride copolymer
(electrodes contg. copolymers of fluoro and acrylic monomers for laminar **batteries**)
RN 61778-05-0 HCA
CN 2-Propenoic acid, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

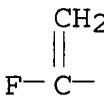
CM 1

CRN 79-10-7
CMF C3 H4 O2



CM 2

CRN 75-38-7
CMF C2 H2 F2

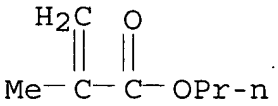


IC ICM H01M004-62
ICS H01M004-02; H01M010-40
CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
ST laminar **battery** electrode fluoro acrylate monomer copolymer
IT Carbon fibers, uses
(electrodes contg. copolymers of fluoro and acrylic monomers for laminar **batteries**)
IT 12057-17-9, Lithium manganese oxide (LiMn2O4) 25134-60-5, Acrylic acid-tetrafluoroethylene copolymer **61778-05-0**, Acrylic acid-vinylidene fluoride copolymer 82077-22-3
(electrodes contg. copolymers of fluoro and acrylic monomers for laminar **batteries**)

L47 ANSWER 9 OF 14 HCA COPYRIGHT 2003 ACS
130:198827 Vinylidene fluoride polymer solid **electrolytes** and secondary **batteries** using them. Amano, Kosuke; Yagata, Hiroshi; Sakauchi, Hiroshi (NEC Corp., Japan). Jpn. Kokai Tokkyo Koho JP 11053936 A2 19990226 Heisei, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-210850 19970805.
AB The **electrolytes** comprise vinylidene fluoride polymers having side chains introduced by electron-beam radiation and **electrolytic** org. solvent solns. contg. ionic compds. The **electrolytes** show high ionic cond. and good mech. strength.
IT **220864-69-7P**
(vinylidene fluoride polymer solid **electrolytes** for secondary **batteries**)
RN 220864-69-7 HCA
CN 2-Propenoic acid, 2-methyl-, hexafluoropropyl ester, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

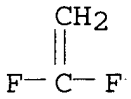
CRN 65444-76-0
CMF C7 H6 F6 O2
CCI IDS



6 (D1—F)

CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01B001-12
ICS C08F002-54; C08K003-00; C08L051-06; H01M010-40
CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 35, 38, 76
ST vinylidene fluoride polymer solid **electrolyte** **battery**; electron beam polymn vinylidene fluoride **electrolyte**; lithium secondary **battery** polyvinylidene fluoride **electrolyte**
IT Fluoropolymers, uses
(acrylic; vinylidene fluoride polymer solid **electrolytes** for secondary **batteries**)
IT Secondary **batteries**
(lithium; vinylidene fluoride polymer solid **electrolytes** for secondary **batteries**)
IT Electron beams
(radical polymn. induced by; vinylidene fluoride polymer solid **electrolytes** for secondary **batteries**)
IT Polymerization
(radical, electron beam-induced; vinylidene fluoride polymer solid **electrolytes** for secondary **batteries**)
IT **Battery electrolytes**
Ionic conductors
Polymer **electrolytes**
(vinylidene fluoride polymer solid **electrolytes** for secondary **batteries**)
IT 12031-65-1, Lithium nickel oxide (LiNiO2) 12057-17-9, Lithium manganese oxide (LiMn2O4) 12190-79-3, Cobalt lithium oxide (CoLiO2)
(cathodes; vinylidene fluoride polymer solid **electrolytes**

for secondary **batteries**)

IT 96-48-0, .gamma.-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, Tetrahydrofuran, uses 623-53-0, Methyl ethyl carbonate (solvents; vinylidene fluoride polymer solid **electrolytes** for secondary **batteries**)

IT 220864-68-6P **220864-69-7P** (vinylidene fluoride polymer solid **electrolytes** for secondary **batteries**)

IT 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium trifluoromethanesulfonate 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imide 132404-42-3, Lithium tris(trifluoromethylsulfonyl)methanide 132843-44-8, Lithium bis(pentafluoroethylsulfonyl)imide 210406-60-3 (vinylidene fluoride polymer solid **electrolytes** for secondary **batteries**)

L47 ANSWER 10 OF 14 HCA COPYRIGHT 2003 ACS

130:58415 Electrochemical monitoring of the behavior of organically coated aluminum during atmospheric exposure. Pistorius, P. C.; Leitch, J. E. (Department of Materials Science and Metallurgical Engineering, University of Pretoria, S. Afr.). International Corrosion Congress, Proceedings, 13th, Melbourne, Nov., 1996, Paper 92/1-Paper 92/8. Australasian Corrosion Association: Clayton, Australia. (English) 1996. CODEN: 66UFAT.

AB The condition of organically coated aluminum following atm. exposure was quantified by means of the film resistance (derived from potential pulse measurements) and water uptake (derived from capacitance measurements). Rapid changes in the film resistance following exposure to the **electrolyte**, large differences in resistance between samples from the same coupon, and decoration of defects by copper plating indicate that the coatings generally contain defects. For this reason, capacitance-based measurements are not useful to characterize the protection offered by the coating, since the capacitance reflects the av. behavior of the coating rather than the role of defects. The value of the film resistance after 48 h of **electrolyte** exposure is similar to that after exposure for up to 1000 h.

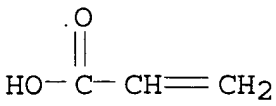
IT **61778-05-0**, Acrylic acid vinylidene fluoride copolymer (electrochem. monitoring during atm. exposure of aluminum coated by)

RN 61778-05-0 HCA

CN 2-Propenoic acid, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

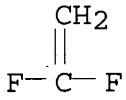
CM 1

CRN 79-10-7
CMF C3 H4 O2



CM 2

CRN 75-38-7
CMF C2 H2 F2

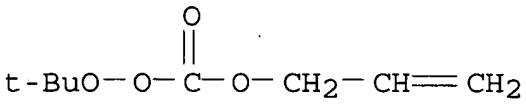


CC **72-6** (Electrochemistry)
Section cross-reference(s): 56
IT **61778-05-0**, Acrylic acid vinylidene fluoride copolymer
(electrochem. monitoring during atm. exposure of aluminum coated by)

L47 ANSWER 11 OF 14 HCA COPYRIGHT 2003 ACS
128:232827 Nonaqueous **electrolyte** secondary **batteries** containing fluoropolymer binders. Oishi, Toshio; Kawamura, Katsunori (Central Glass Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 10064547 A2 19980306 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1996-222003 19960823.
AB The title **batteries** use anode- and/or cathode active mass contg. copolymers of vinylidene fluoride, chlorotrifluoroethylene, and a monomer having double bond and peroxy group as binders. The binder resins have good adhesion with current collectors and resulting **batteries** have long cycle life.
IT **204714-24-9P 204714-27-2P 204714-29-4P 204714-30-7P**
(fluoropolymer binders in nonaq. **batteries** for adhesion and long cycle life)
RN 204714-24-9 HCA
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with chlorotrifluoroethene, 1,1-difluoroethene, OO-(1,1-dimethylethyl) O-2-propenyl carbonoperoxoate and ethyl 2-propenoate, graft (9CI) (CA INDEX NAME)

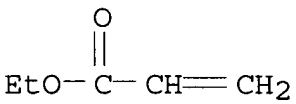
CM 1

CRN 65700-08-5
CMF C8 H14 O4



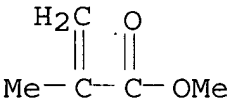
CM 2

CRN 140-88-5
CMF C5 H8 O2



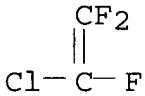
CM 3

CRN 80-62-6
CMF C5 H8 O2



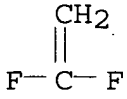
CM 4

CRN 79-38-9
CMF C2 Cl F3



CM 5

CRN 75-38-7
CMF C2 H2 F2

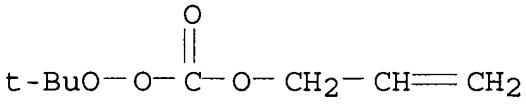


RN 204714-27-2 HCA
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with

chlorotrifluoroethene, 1,1-difluoroethene, OO-(1,1-dimethylethyl) O-2-propenyl carbonoperoxoate and 2-hydroxyethyl 2-propenoate, graft (9CI) (CA INDEX NAME)

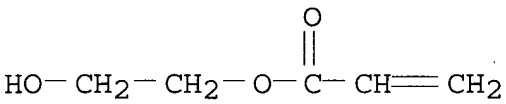
CM 1

CRN 65700-08-5
CMF C8 H14 O4



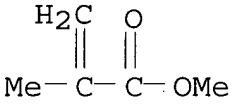
CM 2

CRN 818-61-1
CMF C5 H8 O3



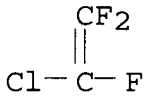
CM 3

CRN 80-62-6
CMF C5 H8 O2



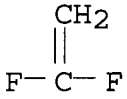
CM 4

CRN 79-38-9
CMF C2 Cl F3



CM 5

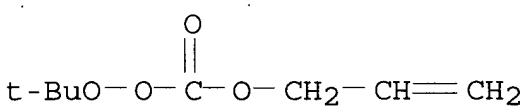
CRN 75-38-7
CMF C2 H2 F2



RN 204714-29-4 HCA
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with chlorotrifluoroethene, 1,1-difluoroethene, OO-(1,1-dimethylethyl) O-2-propenyl carbonoperoxoate and 2-propenoic acid, graft (9CI) (CA INDEX NAME)

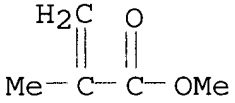
CM 1

CRN 65700-08-5
CMF C8 H14 O4



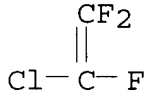
CM 2

CRN 80-62-6
CMF C5 H8 O2



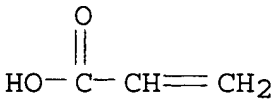
CM 3

CRN 79-38-9
CMF C2 Cl F3



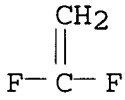
CM 4

CRN 79-10-7
CMF C3 H4 O2



CM 5

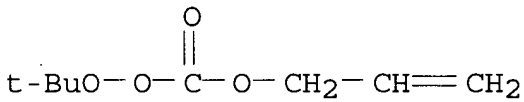
CRN 75-38-7
CMF C2 H2 F2



RN 204714-30-7 HCA
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with chlorotrifluoroethene, 1,1-difluoroethene, OO-(1,1-dimethylethyl) O-2-propenyl carbonoperoxoate, ethyl 2-propenoate and 2-propenoic acid, graft (9CI) (CA INDEX NAME)

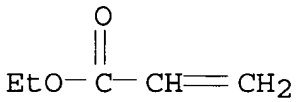
CM 1

CRN 65700-08-5
CMF C8 H14 O4



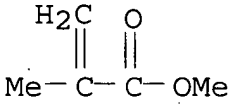
CM 2

CRN 140-88-5
CMF C5 H8 O2



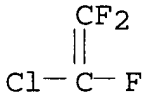
CM 3

CRN 80-62-6
CMF C5 H8 O2



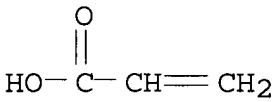
CM 4

CRN 79-38-9
CMF C2 Cl F3



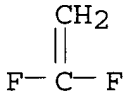
CM 5

CRN 79-10-7
CMF C3 H4 O2



CM 6

CRN 75-38-7
CMF C2 H2 F2



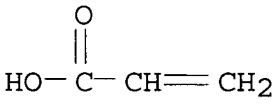
IC ICM H01M004-62
ICS H01M004-02; H01M004-58; H01M010-40
CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST fluoropolymer binder nonaq **battery** electrode
IT **Battery** anodes
Battery cathodes
Binders
(fluoropolymer binders in nonaq. **batteries** for adhesion and long cycle life)
IT Fluoropolymers, uses
(fluoropolymer binders in nonaq. **batteries** for adhesion

and long cycle life)
IT Secondary **batteries**
(lithium; fluoropolymer binders in nonaq. **batteries** for adhesion and long cycle life)
IT 89823-13-2P 110872-66-7P **204714-24-9P**
204714-27-2P 204714-29-4P 204714-30-7P
204714-32-9P
(fluoropolymer binders in nonaq. **batteries** for adhesion and long cycle life)

L47 ANSWER 12 OF 14 HCA COPYRIGHT 2003 ACS
127:222978 Polymer **electrolyte** compositions and **batteries** thereof. Kronfli, Esam (AEA Technology PLC, Japan). Jpn. Kokai Tokkyo Koho JP 09213370 A2 19970815 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-17945 19970131. PRIORITY: GB 1996-1890 19960131; GB 1996-18695 19960906.
AB The **electrolyte** compns. contain a salt, an org. solvent sol. for the salt, and a vinylidene fluoride based polymer, which is grafted by a mono-unsatd. carboxylic acid, sulfonic acid, ester, or amide monomer. Li **batteries** use these **electrolyte** compns. or use electrodes contg. these **electrolytes**.
IT **109955-89-7**, Acrylic acid-vinylidene fluoride graft copolymer
(compns. and manuf. of polymer **electrolytes** for secondary lithium **batteries**)
RN 109955-89-7 HCA
CN 2-Propenoic acid, polymer with 1,1-difluoroethene, graft (9CI) (CA INDEX NAME)

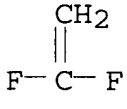
CM 1

CRN 79-10-7
CMF C3 H4 O2



CM 2

CRN 75-38-7
CMF C2 H2 F2

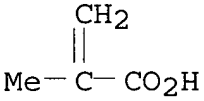


IT **113253-83-1**
(graft; compns. and manuf. of polymer **electrolytes** for

secondary lithium **batteries**)
RN 113253-83-1 HCA
CN 2-Propenoic acid, 2-methyl-, polymer with 1,1-difluoroethene, graft (9CI) (CA INDEX NAME)

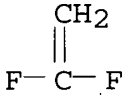
CM 1

CRN 79-41-4
CMF C4 H6 O2



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M010-40
ICS C08F259-08
CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium **battery** polyvinylidene fluoride **electrolyte** compn; grafted polyvinylidene fluoride **electrolyte** lithium **battery**
IT **Battery** anodes
(compns. and manuf. of polymer **electrolytes** for graphite anodes in secondary lithium **batteries**)
IT **Battery** cathodes
(compns. and manuf. of polymer **electrolytes** for lithium nickel oxide cathodes in secondary lithium **batteries**)
IT **Battery electrolytes**
(compns. and manuf. of polymer **electrolytes** for secondary lithium **batteries**)
IT 7782-42-5, Graphite, uses
(compns. and manuf. of polymer **electrolytes** for graphite anodes in secondary lithium **batteries**)
IT 39300-70-4, Lithium nickel oxide
(compns. and manuf. of polymer **electrolytes** for lithium nickel oxide cathodes in secondary lithium **batteries**)
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 109-99-9, Thf, uses 127-19-5, Dimethyl acetamide 143-24-8, Tetraglyme 7791-03-9, Lithium perchlorate 90076-65-6 **109955-89-7**, Acrylic acid-vinylidene fluoride graft

copolymer
(compns. and manuf. of polymer **electrolytes** for secondary lithium **batteries**)

IT **113253-83-1**
(graft; compns. and manuf. of polymer **electrolytes** for secondary lithium **batteries**)

L47 ANSWER 13 OF 14 HCA COPYRIGHT 2003 ACS

127:182290 Counterion transport numbers of poly(acrylic acid)-grafted porous ion-exchange membranes as detd. from current step measurements. Kontturi, K.; Mafe, S.; Manzanares, J. A.; Sundholm, G.; Vapola, R. (Dep. of Thermodynamics, Fac. of Phys., Univ. of Valencia, Burjasot, E-46100, Spain). Electrochimica Acta, 42(16), 2569-2575 (English) 1997. CODEN: ELCAAV. ISSN: 0013-4686. Publisher: Elsevier.

AB The effect of an elec. current on the concn. polarization of the external bathing solns. and the perm-selectivity was studied of porous ion-exchange membranes - poly(vinylidene fluoride) membranes graft modified with poly(acrylic acid). The exptl. approach is based on the transient behavior of the total elec. potential drop through the membrane cell when a current step is imposed from external nonpolarizable electrodes. When this voltage drop is recorded as a function of time, a transition time characteristic of each membrane system was obtained. From this time, the counterion transport no. for the salt soln. (KCl-H2O) in the membrane can be obtained. The theor. modeling is based on the time-dependent Nernst-Planck equations. The transport no., and then the membrane perm-selectivity, decreases with the elec. current. The higher the membrane grafting ratio and the lower the external salt concn. the larger the perm-selectivity changes.

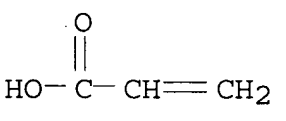
IT **109955-89-7**
(counterion transport nos. of acrylic acid-vinylidene fluoride graft copolymer porous ion-exchange membranes as detd. from current step measurements in KCl soln.)

RN 109955-89-7 HCA

CN 2-Propenoic acid, polymer with 1,1-difluoroethene, graft (9CI) (CA INDEX NAME)

CM 1

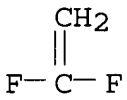
CRN 79-10-7
CMF C3 H4 O2



CM 2

CRN 75-38-7

CMF C2 H2 F2



CC **72-2** (Electrochemistry)
Section cross-reference(s): 65, 66, 76

IT **Electrolytic** polarization
(concn.; counterion transport nos. of acrylic acid-vinylidene fluoride graft copolymer porous ion-exchange membranes as detd. from current step measurements in KCl soln.)

IT 7447-40-7, Potassium chloride, properties 66796-30-3, Nafion 117 **109955-89-7**
(counterion transport nos. of acrylic acid-vinylidene fluoride graft copolymer porous ion-exchange membranes as detd. from current step measurements in KCl soln.)

L47 ANSWER 14 OF 14 HCA COPYRIGHT 2003 ACS

87:168952 Composite membrane. Sata, Toshikatsu; Motani, Kensuke; Nakahara, Akihiko; Murata, Yasuo (Tokuyama Soda Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 52075678 19770624 Showa, 12 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1975-151854 19751222.

AB Composite membranes used as diaphragms for **electrolysis** of NaCl and having good current efficiency were prepd. by bonding polymers to fluororesin cation exchangers such as hydrolyzed perfluoro(3,6-dioxa-4-methyl-7-octenesulfonyl fluoride)-tetrafluoroethylene copolymer (I) [26654-97-7] in the presence of vinyl monomers. Thus, a diaphragm having current efficiency 92-3% for 3 months was prepd. by coating a hydrolyzed I cation exchanger with a mixt. of 55% divinylbenzene 5, styrene 5, methacrylic acid 2.5, 4-vinylpyridine 2.5, tert-Bu lauryl peroxide 0.3, and a PVC paste resin 1 part and heating at 110.degree. to form a polymer [64422-42-0] layer.

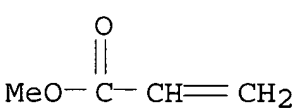
IT **57592-88-8**
(composites with hydrolyzed fluoro(dioxydemethylsulfonate fluoride)-tetrafluoroethylene copolymer, for diaphragms for sodium chloride **electrolysis**)

RN 57592-88-8 HCA

CN 2-Propenoic acid, methyl ester, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

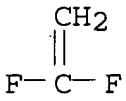
CM 1

CRN 96-33-3
CMF C4 H6 O2



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC C08J005-22
CC 37-3 (Plastics Fabrication and Uses)
ST sodium chloride **electrolysis** diaphragm; fluoropolymer composite **electrolysis** diaphragm; vinyl polymer fluoropolymer composite; membrane fluoropolymer polyvinyl composite
IT Vinyl compounds, polymers
(composites with fluoropolymers, for diaphragms for sodium chloride **electrolysis**)
IT Fluoropolymers
(composites with vinylpolymers, for diaphragms for sodium chloride **electrolysis**)
IT **Electrolytic cells**
(for brine **electrolysis**, diaphragms for)
IT Rubber, butadiene-styrene, uses and miscellaneous
(reaction products with vinyl compds., chlorosulfonated poly(vinylidene fluoride)-contg., composite with chlorosulfonated poly(vinylidene fluoride), for diaphragms for potassium chloride **electrolysis**)
IT Rubber, neoprene, compounds
(reaction products with vinyl compds., fluoroethylene copolymer-contg., for diaphragms for sodium chloride **electrolysis**)
IT Rubber, synthetic
(chlorosulfonated polyethylene, reaction products with vinyl compds., fluoro polymer-contg., for diaphragms for sodium chloride **electrolysis**)
IT 24937-79-9D, chlorosulfonated
(composite with butadiene-divinylbenzene-methacrylic acid-stearyl methacrylate-styrene copolymer, for diaphragms for sodium chloride **electrolysis**)
IT 64422-41-9
(composite with chlorotrifluoroethylene-maleic anhydride copolymer, for diaphragms for sodium chloride **electrolysis**)
IT 64368-64-5
(composite with divinylbenzene-methacrylic acid-propylene-styrene copolymer, for diaphragms for sodium chloride **electrolysis**)
IT 25684-76-8
(composite with fluoropolymer, for diaphragms for sodium chloride

electrolysis)
IT 25038-89-5
(composite with hydrolyzed fluoro(dioxymethylsulfonate fluoride)-tetrafluoride copolyer, for diaphragms for sodium chloride **electrolysis**)
IT 64422-40-8
(composites with chlorosulfonated poly(vinylpyridene fluoride), diaphragms for chloride **electrolysis**)
IT 32360-05-7D, polymer with butadiene-styrene rubber and divinylbenzene and methacrylic acid and styrene
(composites with chlorosulfonated poly(vinylpyridine fluoride), for diaphragms for potassium chloride **electrolysis**)
IT 26654-97-7D, hydrolyzed
(composites with divinylbenzene-methacrylic acid-styrene-vinyl chloride-vinylpyridine copolymer, for diaphragms for sodium chloride **electrolysis**)
IT **57592-88-8**
(composites with hydrolyzed fluoro(dioxydemethylsulfonate fluoride)-tetrafluoroethylene copolymer, for diaphragms for sodium chloride **electrolysis**)
IT 79-10-7D, polymer with divinylbenzene and neoprene and styrene 100-42-5D, polymer with acrylic acid and divinylbenzene and neoprene
(composites with hydrolyzed perfluoro(dioxymethyloctanesulfonate fluoride)-tetrafluoroethylene copolymer, for diaphragms for sodium chloride **electrolysis**)
IT 79-41-4D, polymer with chlorosulfonated polyethylene and divinylbenzene and vinylpyridine 100-43-6D, polymer with chlorosulfonated polyethylene and divinylbenzene and methacrylic acid 1321-74-0D, polymer with chlorosulfonated polyethylene and methacrylic acid and vinylpyridine 64422-32-8
(composites with perfluoro(dioxymethyloctanesulfonate fluoride)-tetrafluoroethylene copolymer, for diaphragms for sodium chloride **electrolysis**)
IT 63511-67-1
(composites with tetrafluoroethylene-vinylpyridine fluoride copolymer, for diaphragms for sodium chloride **electrolysis**)
IT 7447-40-7, reactions 7647-14-5, reactions
(**electrolysis** of, diaphragms for, fluoropolymer composites as)

=> d l48 1-24 ti

L48 ANSWER 1 OF 24 HCA COPYRIGHT 2003 ACS
TI Water-repellent articles having coating layers with improved adhesion

L48 ANSWER 2 OF 24 HCA COPYRIGHT 2003 ACS
TI Manufacture of decorated moldings

L48 ANSWER 3 OF 24 HCA COPYRIGHT 2003 ACS

TI Propylene polymer sheets with good gloss for thermoforming

L48 ANSWER 4 OF 24 HCA COPYRIGHT 2003 ACS
TI Slab waveguide-type optical modulators using optically active and nonlinear polymers

L48 ANSWER 5 OF 24 HCA COPYRIGHT 2003 ACS
TI Coated articles and their repairing process

L48 ANSWER 6 OF 24 HCA COPYRIGHT 2003 ACS
TI Inorganic compound-coated multilayer films with good moisture resistance

L48 ANSWER 7 OF 24 HCA COPYRIGHT 2003 ACS
TI Electrostatographic development carrier, manufacture of the same and imaging method

L48 ANSWER 8 OF 24 HCA COPYRIGHT 2003 ACS
TI Durable coated metals with corrosion-resistance and processability and snow-removing properties

L48 ANSWER 9 OF 24 HCA COPYRIGHT 2003 ACS
TI Weather-resistant printed multilayer polyolefin-covered steel plates

L48 ANSWER 10 OF 24 HCA COPYRIGHT 2003 ACS
TI Optically dissimilar composition for polymeric reflective bodies

L48 ANSWER 11 OF 24 HCA COPYRIGHT 2003 ACS
TI Decorative steel sheets coated with olefin

L48 ANSWER 12 OF 24 HCA COPYRIGHT 2003 ACS
TI Optically dissimilar compositions for polymeric reflective bodies

L48 ANSWER 13 OF 24 HCA COPYRIGHT 2003 ACS
TI Sprayable composition for making polymeric glove or coating on skin using acetone solvent

L48 ANSWER 14 OF 24 HCA COPYRIGHT 2003 ACS
TI Electrophotographic photoreceptor with photosensitive layer using fluorine-containing block copolymer

L48 ANSWER 15 OF 24 HCA COPYRIGHT 2003 ACS
TI Erasable laser recording material

L48 ANSWER 16 OF 24 HCA COPYRIGHT 2003 ACS
TI Thermal degradation of copolymers of vinyl fluoride with methacrylic acid and its methyl and butyl esters

L48 ANSWER 17 OF 24 HCA COPYRIGHT 2003 ACS
TI Carriers for development of electrostatic images

L48 ANSWER 18 OF 24 HCA COPYRIGHT 2003 ACS

TI Synthetic resin for use as an adhesive in preparing composite material comprising poly(vinylidene fluoride) and poly(vinyl chloride) and this composite

L48 ANSWER 19 OF 24 HCA COPYRIGHT 2003 ACS
TI Radiation degradation of addition polymers containing fluorine. Search for improved lithographic resists

L48 ANSWER 20 OF 24 HCA COPYRIGHT 2003 ACS
TI Synthetic resin for use as an adhesive

L48 ANSWER 21 OF 24 HCA COPYRIGHT 2003 ACS
TI Modification of poly(vinylidene fluoride)

L48 ANSWER 22 OF 24 HCA COPYRIGHT 2003 ACS
TI Use of infrared specular reflectance in study of ultraviolet degradation of polymer films

L48 ANSWER 23 OF 24 HCA COPYRIGHT 2003 ACS
TI Grafting polymeric films

L48 ANSWER 24 OF 24 HCA COPYRIGHT 2003 ACS
TI Homopolymers and copolymers of vinylidene fluoride